noranda

ANNUAL REPORT

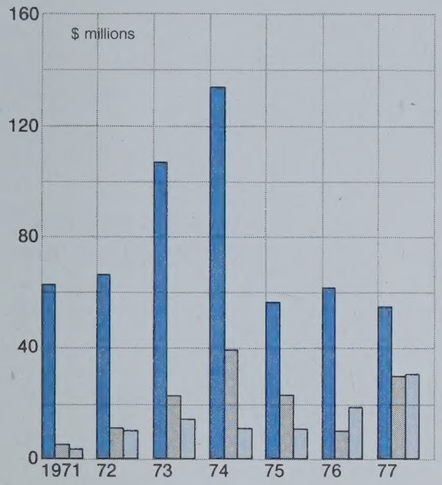
1977

Noranda Mines Limited
(and consolidated subsidiaries)

Five Year Financial Summary ($ in millions)

	1977	1976	1975	1974	1973
Earnings —					
Revenue from metals, products and custom tolls	1,386.5	1,232.4	1,156.4	1,147.0	848.5
Dividends, interest and other income	9.3	2.4	2.9	4.9	2.1
Cost of metal production and products sold including depreciation, exploration and administration	1,254.3	1,118.1	1,046.5	889.9	721.7
Interest expense	71.9	61.7	45.3	33.8	19.8
Income taxes	22.7	25.1	41.5	106.6	54.2
Minority interest in profits of subsidiaries	12.6	10.1	10.1	17.1	1.3
Earnings of Noranda and subsidiaries	34.3	19.8	15.9	104.5	53.6
Share of after-tax profits in associated companies	32.9	26.9	34.6	50.4	67.9
Earnings	67.2	46.7	50.5	154.9	121.5
Financial Position —					
Capital employed —					
Working capital	163.3	197.5	188.0	182.9	146.6
Investments in and advances to associated and other companies	387.2	361.9	372.2	326.0	220.6
Fixed assets — net	882.6	855.5	805.5	685.0	582.7
Other assets	131.2	118.5	104.6	90.8	69.6
	1,564.3	1,533.4	1,470.3	1,284.7	1,019.5
Capital sources —					
Shareholders' equity	754.1	715.3	696.4	692.8	577.7
Long-term debt	588.9	603.4	533.1	383.7	335.6
Minority interest in subsidiaries	128.2	120.3	114.4	99.9	44.2
Other	93.1	94.4	126.4	108.3	62.0
	1,564.3	1,533.4	1,470.3	1,284.7	1,019.5
Changes in Financial Position —					
Sources —					
From operations	141.9	83.9	126.9	244.3	135.6
Long-term financing (net)	(10.1)	70.3	139.3	38.4	(14.3)
Other (net)	15.9	8.8	1.0	8.9	11.3
	147.7	163.0	267.2	291.6	132.6
Application —					
Dividends	28.3	28.3	47.2	42.3	32.9
Capital expenditure —					
Fixed assets	119.6	115.6	158.2	101.7	82.9
Investments and advances (net)	7.4	(21.9)	31.0	73.4	(36.0)
Other, including acquisitions	26.5	31.6	25.7	37.9	35.5
Increase (decrease) in working capital	(34.1)	9.4	5.1	36.3	17.3
	147.7	163.0	267.2	291.6	132.6
Share data —					
Per share —					
Earnings	$ 2.85	1.98	2.14	6.59	5.17
Dividends (class "A")	$ 1.20	1.20	2.00	1.80	1.40
Market price range High	$ 34.38	39.75	39.75	54.00	59.38
Low	$ 19.63	26.37	27.25	26.63	41.50
Shares outstanding	24,464,511	24,463,886	24,451,266	24,442,441	24,343,771

Earnings by division (before common costs)



Annual Meeting
April 28, 1978, 2:30 p.m.
Royal York Hotel, Toronto

Head Office
P.O. Box 45,
Commerce Court West,
Toronto, M5L 1B6

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On peut se procurer la version française ou anglaise de ce rapport en en faisant la demande au siege social de la compagnie, B.P. 45, Commerce Court West, Toronto, Ontario M5L 1B6

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	Shareholders	Ownership
Canada	24,900	94%
U.S.A.	1,800	3%
Other	550	3%

Employees
(totals for Group and associates)

Canada	1977	1976
Mining, Smelting, Refining	14,500	14,800
Manufacturing	4,600	5,000
Forest Products	12,200	10,800
Total	31,300	30,600
International (mainly associates)	17,800	15,500

Divisional Results (in thousands)

Earnings	1977	1976	1975
Mining & Metallurgical (net)	$ 55,405	$61,621	$56,753
Manufacturing	30,531	10,611	23,286
Forest Products	31,077	19,224	11,232
	117,013	91,456	91,271
Less Common Costs	49,837	44,721	40,746
Earnings as reported	67,176	46,735	50,525

In this report unless indicated otherwise, — Divisions and/or Companies are wholly owned; production is for the calendar year 1977; tons mean short tons of 2,000 lbs.; Mineral Inventories are as at Dec. 31/77 and financial data is in Canadian dollars.

This report, excepting the cover, is printed on Fraser BP Opaque, English Finish paper.

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President, Dudley & Wilkinson Inc.,
New York
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Chairman, Banque Canadienne
Nationale, Montreal
Elected 1968

*William James,
Executive Vice-President,
Noranda Mines, Toronto
Elected 1968

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Company Director, Toronto
Elected 1974

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Toronto
Elected 1962

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Chairman, Placer Development Ltd.,
Vancouver
Elected 1975

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Alberta Energy Company Ltd., Calgary
Elected 1973

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and Vallieres, Quebec
Elected 1966

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Executive Vice-President,
Gulf Oil Canada Limited, Toronto
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*Adam H. Zimmerman,
Executive Vice-President,
Noranda Mines, Toronto
Elected 1974

* Member of the Executive Committee

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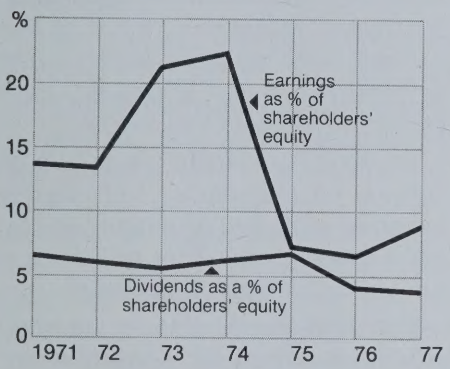
Earnings as % of shareholders' equity



Earnings and Dividends

Earnings of $67 million in 1977 were 44% better than those of the previous year. However, 1976 was a very poor year for Noranda, and 1977 earnings fell far short of providing a satisfactory return on shareholders' equity. Earnings per share from the various divisions were as follows:

Earnings Per Share	1977	1976	% Change
From:			
Mining, smelting & refining	$2.35	$2.61	— 10
Manufacturing	1.29	0.45	+ 187
Forest products	1.32	0.82	+ 61
	$4.96	$3.88	+ 28
Less: common costs	2.11	1.90	+ 11
	$2.85	$1.98	+ 44

Four quarterly dividends of 30¢ were paid on the Class A shares for a total of $1.20 per share, the same as in 1976. Similar payments were made on the Class B shares, less 15% tax on the dividend in the first quarter.

The economic recovery throughout the industrialized world remained sluggish and uneven during the year. Noranda's results were affected by a number of divergent trends, and diversification proved to be an advantage in 1977. Demand and prices for many minerals, particularly copper and zinc, were very weak as was the market for manufactured products in Canada. On the other hand, markets for aluminum, molybdenum, lead, lumber and paper were relatively strong, and the decline in the value of the Canadian dollar had a significant impact on results, particularly during the fourth quarter.

Quarterly earnings were highly erratic. Earnings of 78¢ per share during the first quarter were favourably affected by rising copper prices. This trend was reversed during the second quarter, affecting both the value of production and of inventories, and earnings declined to 58¢ per share. In the third quarter, the price of copper continued to drop and zinc prices were sharply reduced, with the result that earnings were only 21¢ per share. In the fourth quarter, earnings recovered to $1.28 per share, in part reflecting stabilized zinc prices, some improvement in the copper price and the reduced value of the Canadian dollar.

A number of occurrences during the fourth quarter increased earnings for that period by 32¢ per share. On the positive side were gains on the disposal of certain assets of $6 million after taxes, together with tax adjustments (including the full year's impact of the inventory tax credit which did not become law until December) of $7 million. These gains were partly offset by special writedowns of some assets aggregating $6 million.

For the full year, earnings from mining and metallurgical operations were at their lowest level in many years reflecting weak markets and prices, curtailed production and rising costs, all of which were only partially offset by the decline in the value of the Canadian dollar. For the first time in Noranda's history, the combined contributions of earnings by manufacturing and forest products exceeded that of mining and metallurgical operations.

The substantial improvement in manufacturing results was achieved in spite of the fact that earnings from domestic operations declined, and was entirely attributable to operations outside Canada, most notably the expanded U.S. aluminum reduction plant and the various foreign affiliates of Canada Wire and Cable.

Forest products earnings were at record levels, as buoyant lumber demand and the decline in the value of the Canadian dollar more than offset the progressive weakening in the market for pulp. The extreme sensitivity of forest products earnings to exchange rates is indicated by the fact that, had the relationship of the Canadian and U.S. dollars been the same as the average in 1976, reported results would have been 40% lower.

The geographic breakdown of Noranda's earnings before exploration and common costs during 1977 was as follows:

Maritime provinces	6%
Quebec	25
Ontario	11
Western provinces	32
Total Canada	74%
Foreign	26
Total	100%

Financial Position

Capital spending by Noranda and its subsidiaries continued to be limited to essential items and to programs which had been previously committed. The expansion of the Brunswick mine was suspended in the face of deteriorating zinc markets and at the year end the only major project in progress was the rebuild of Fraser Companies' Edmundston pulp mill.

Despite the restraint, capital expenditures plus deferred development totalled $141 million compared with $143 million in 1976. Of this amount, some $55 million was spent on the major projects at Fraser Companies and Brunswick, and $12 million of Canadian Hunter expenditures were capitalized. The balance of $74 million consisted of a large number of smaller items deemed essential to maintenance of efficient operations or to improved environmental control. Much more should have been spent on such items, and would have been had funds been available.

This illustrates one of the debilitating effects which inflation has had on the financial strength of many corporations — the fact that depreciation reserves based on historical costs become completely inadequate to provide for the replacement of existing productive facilities. Earnings as reported are not available for payment of dividends or to finance growth, since a significant portion of them must be used simply to maintain the efficiency of existing plant and equipment. To the extent that this is necessary, earnings as measured by commonly accepted accounting principles are overstated.

A further problem created by inflation is its impact on the working capital needed to carry on a business. As a rough estimate, the nominal dollar value of inventories and accounts receivable required by Noranda to carry on the same physical volume of business as five years ago has grown by more than $350 million over the period. This amount must obviously either be provided out of earnings or borrowed. Moreover, much of the increase in the value of inventories was included in earnings and taxed, even though no real gain was involved.

An effort to quantify the impact of inflation on Noranda's 1977 results, generally in the form recommended by the Ontario Committee on Inflation Accounting, appears on page 22.

The consequence of the pressure of inflation combined with a totally inadequate level of earnings since 1974 has been a considerable decline in Noranda's liquidity which continued during 1977. No long term financing was undertaken and net working capital declined by $34 million.

Major Developments

Despite the general policy of restraint, there were a number of developments during 1977 which should have a favourable impact on Noranda in the long run.

The zinc-lead mine project in Ireland, 75%-owned by Tara Exploration and Development, was completed within budget during the first half and had achieved commercial production levels at the year end. Production will be at less than capacity levels in 1978, however, due to zinc market conditions. Tara acquired a further 15% interest in Northgate Exploration and now owns 22% of that company.

In 1977, Noranda acquired a further 4% interest in Tara. Subsequent to the year end, $18.3 million of loans to certain Tara shareholders were converted into shares, and Noranda's aggregate interest in the company is now 41.3%.

Development of the Agnew Lake uranium mine in Ontario, 90% owned by Kerr Addison, was completed but initial production difficulties are being encountered.

The Canadian Hunter exploration program in Western Canada continued at an active pace, and substantial additions were made to proven, probable and potential reserves of natural gas. Total direct expenditures on exploration and development were $56.5 million, of which $19 million were contributed by Noranda and the balance financed through sale of participations in the program. Noranda's share in the program has been reduced to 75%, in return for which the new participants will spend $48 million on exploration and development in 1977-78. It is expected that this venture will make a substantial contribution to Noranda's future profitability.

The Potash Corporation of Saskatchewan, a provincial crown corporation, decided not to make an offer to purchase the Central Canada Potash operation.

Noranda Metal Industries' nuclear tube plant at Arnprior, Ontario was essentially completed at a cost of some $24 million. It is expected that this operation will make a contribution to earnings in 1978.

Fraser Companies' $91 million program to rebuild its pulp mill at Edmundston, N.B. continued to progress satisfactorily, as did development of the $300 million pulp-lumber complex at St. Felicien, Que. in which British Columbia Forest Products has a 40% interest. Both projects should be largely completed in 1978. In September, British Columbia Forest Products purchased the Blandin Paper Co. of Grand Rapids, Minn. for a total of some $120 million in cash and debt.

General Business Environment

Canada's economic performance continued to lag behind that of the United States during 1977, with a lower rate of growth and higher levels of unemployment and (despite controls) inflation. The root cause is a generally uncompetitive cost structure, a problem which has been reduced but not eliminated by the decline in the value of the Canadian dollar.

Business and investor confidence, which was seriously eroded by various government actions in recent years, has been further damaged by uncertainty over the future of Quebec. Combined with the decline in corporate liquidity caused by inflation, this suggests that new investment will remain sluggish in Canada even when final demand recovers. As a result, the economic environment for domestic manufacturing operations has been, and will likely continue to be, unsatisfactory.

The federal government's controls on profits, dividends and salaries will remain in effect throughout 1978 as far as Noranda is concerned, but controls on wages will be removed on April 14. These controls are objectionable on philosophical grounds, but except in isolated cases they have had no impact on Noranda's earnings. Market forces have held the prices of most of Noranda's products at levels far below those that would have been permitted by the controls program, and this is likely to be true in 1978 as well.

There were some encouraging signs during 1977 that the problems of industry are becoming better recognized in Canadian political circles. The inventory tax credit proposed in the federal budget in April and finally enacted in December was a first step toward the reduction of taxation on illusory earnings. While there was no tangible progress in breaking the federal-provincial impasse over mining taxation, there were signs that the crippling long-term impact of the problem is finally becoming recognized. Progress toward establishing a more rational system of mining taxation may be possible in 1978.

Outlook

At this stage of the recovery, a resurgence of business capital spending is needed to restore economic activity to a satisfactory level. However, with business confidence at a low ebb and corporate liquidity inadequate in much of the industrialized world, this seems unlikely to happen. It therefore appears that, at best, the economic recovery will continue to be sluggish and uneven during 1978. Prices of many basic commodities remain at levels which are uneconomic for existing operations and totally inadequate to justify new capacity. However, with inventories throughout the world at excessive levels, there is little near-term prospect of a dramatic recovery. In addition, the recent closure of the aluminum reduction plant, as a result of the U.S. coal strike, will have a materially adverse impact on first quarter earnings. It is therefore apparent that 1978 will be another difficult year for Noranda.

In late 1974, in recognition of deteriorating economic and financial conditions, a program of restraint was adopted by Noranda. Over the past three years, however, underlying policies have been based on the premise that, while the recession was more severe than anything encountered since the 1930's, it would be followed by an economic recovery that would begin to restore earnings and corporate liquidity to more reasonable levels by 1978. This premise has obviously proved to be wrong.

In the circumstances, even further restraint will be appropriate in 1978. Mineral exploration activities will be sharply curtailed, operating costs even more closely controlled, and capital spending substantially reduced. In the period ahead, the focus will be on consolidation and retrenchment.

On behalf of the board,

Alfred Powis

Chairman and President

Toronto, Ontario
February 15, 1978.

The pattern of 1976 was repeated in 1977, with rising demand for most metal and mineral products due to the strength of the automotive and housing sectors and, also, to the threatened labour disruptions in a large segment of the non-ferrous metal producing industry in North America. However, in the second half, the combination of the limited strike losses, the reduction of fabricator inventories and the generally disappointing levels of economic activity, once again resulted in surplus production and lower prices.

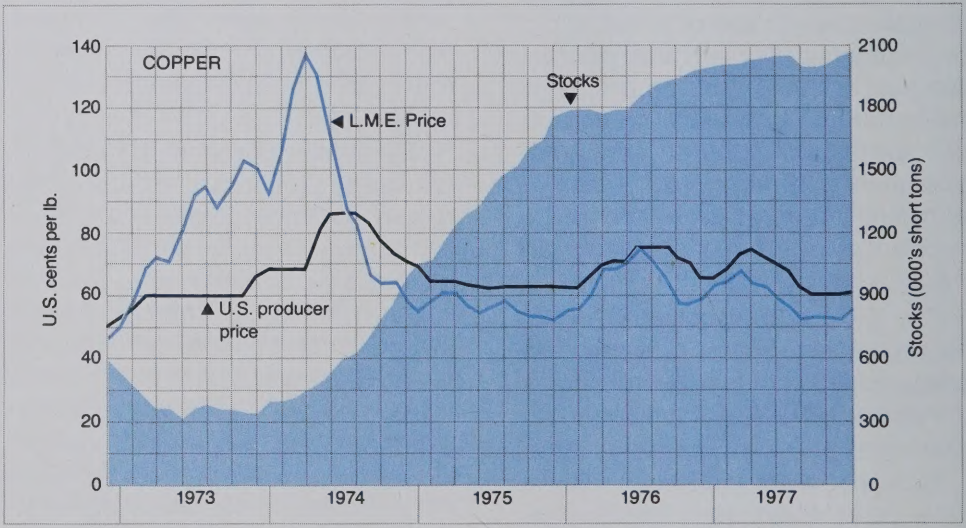
Copper

WESTERN WORLD BALANCE — '000 Short Tons	1975	1976	1977
Supply	6,939	7,342	7,675
Consumption	6,038	7,091	7,586
Year-end Stocks	1,743	1,994	2,083

Copper consumption has risen 25% from the depressed level of 1975. However, prices have not responded because of the heavy surplus accumulated over the past four years and the continuing capacity operations by the major overseas producers. Canadian production in 1977 was 11% below the peak in 1974 and is expected to be 6% lower in 1978.

Discussion among the world's producing and consuming nations, under the auspices of UNCTAD, continues in the search for an intergovernmental solution to the problems of surplus production, uneconomic prices and inadequate investment. Government stockpiles might provide some temporary relief.

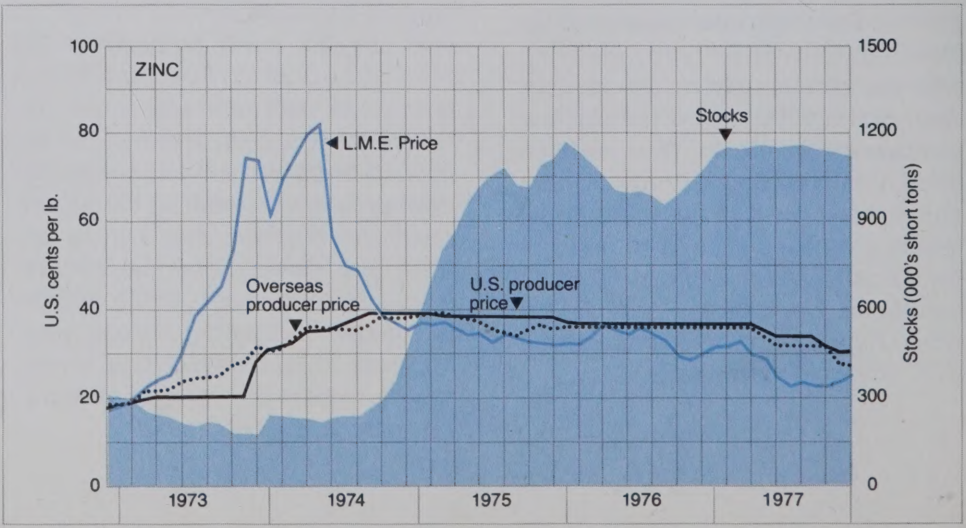
In anticipation of an extended U.S. industry strike at mid-year, the London Metal Exchange quotations rose from 62¢ to 70¢ by March and the U.S. producer price reacted from 65¢ to 74¢. After the early strike settlement, prices declined to 51¢ and 60¢, respectively, in August, before rising to 57¢ and 63¢ at year-end. Canadian prices paralleled changes in the U.S.A. adjusted for the lower value of the Canadian dollar.

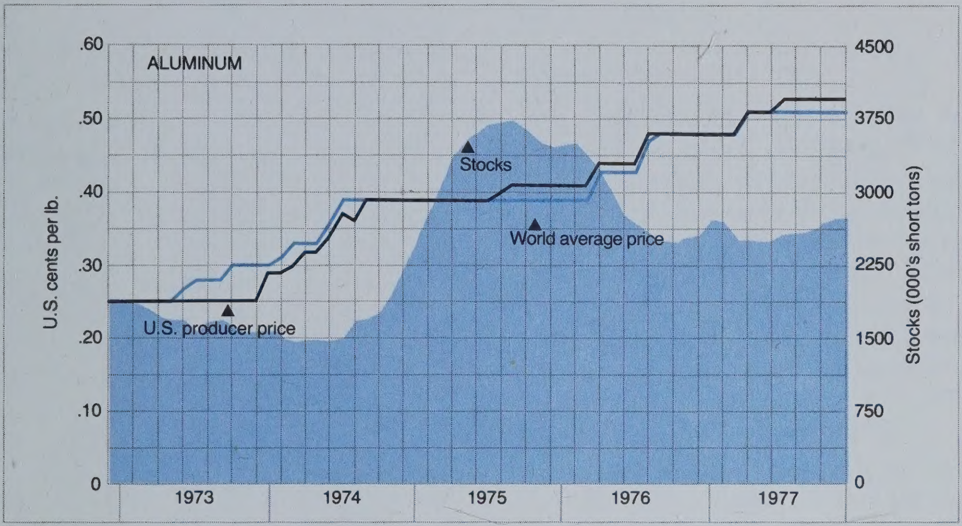


Zinc

WESTERN WORLD BALANCE — '000 Short Tons	1975	1976	1977
Supply	4,240	4,610	4,680
Consumption	3,900	4,660	4,630
Year-end Stocks	1,120	1,070	1,120

Zinc shipments in the first quarter increased as consumers built inventory against possible smelter strikes and improved demand. This stimulated production and when all but one labour contract were negotiated without loss, metal stocks started to rise rapidly. By May, price discounting was again severe in Europe and other offshore markets and prices were reduced from 37¢ to 34¢ in the U.S.A. and from $795 per metric ton to $700 overseas. Production cuts were announced by many producers but without the prospect of an early and significant reduction in stocks, prices weakened further to 30½¢ and $600, respectively, in November. By year-end the market was in balance but uncertain over the possible impact of the escape clause action filed by the U.S. producers for quotas and higher duties.



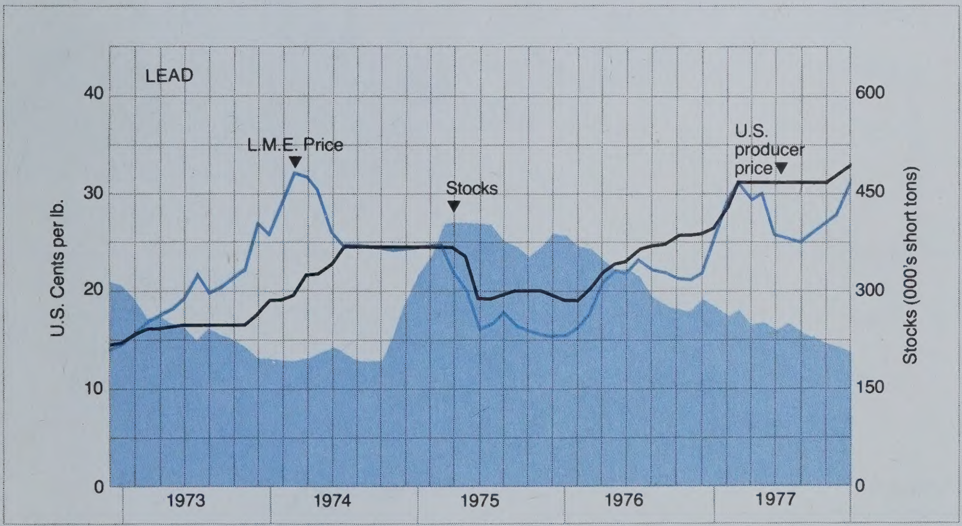


Aluminum

WESTERN WORLD PRIMARY ALUMINUM BALANCE — '000 Short Tons	1975	1976	1977
Supply	10,716	10,050	12,235
Consumption	9,485	11,940	12,039
Year-end Stocks	3,449	2,550	2,755

The primary industry operating rates were 87% of capacity in the U.S.A., 90% in Canada and Europe but only 75% in Japan.

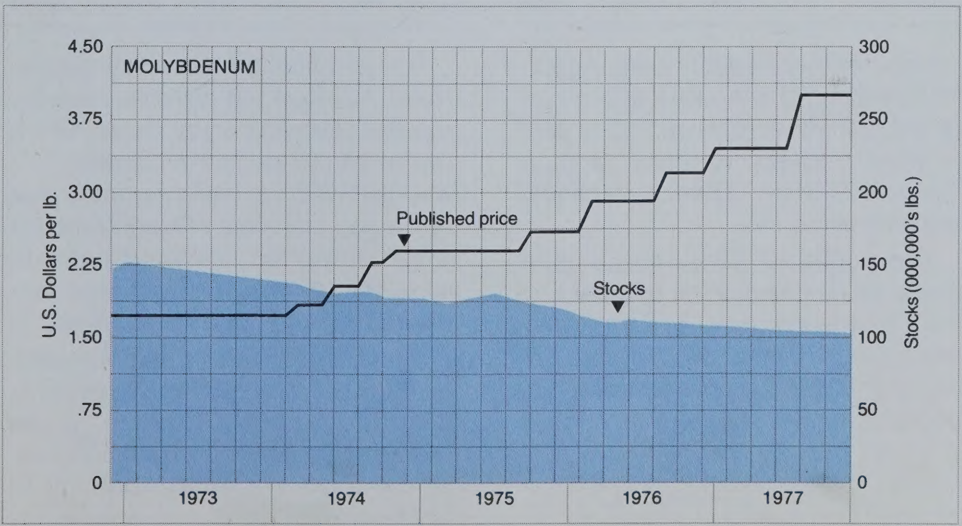
U.S. shipments of aluminum ingot and mill products rose to 6.8 million tons but overall inventories increased 8%. The U.S. producer price increased from 48¢ in two stages, to 53¢.



Lead

WESTERN WORLD BALANCE — '000 Short Tons	1975	1976	1977
Supply	3,540	3,780	3,910
Consumption	3,480	3,900	4,000
Year-end Stocks	410	290	200

The lead market continued to strengthen in 1977 with further growth in consumption, particularly for batteries, combined with production losses due to strikes in Australia and the U.S.A. Prices improved from 26¢ in the U.S.A. and 23¢ on the London Metal Exchange at the beginning of the year to 33¢ and 31¢, respectively, as producer and consumer stocks declined to less than two weeks' requirements. Canadian prices followed.



Molybdenum

WESTERN WORLD BALANCE — '000,000 lbs.	1975	1976	1977
Supply	154	167	181
Consumption	160	177	186
Year-end Stocks	118	108	103

Despite the deepening worldwide depression in the basic steel industry, molybdenum consumption reached a new record as production of high strength low alloy and specialty steels continued to expand. Particularly important are the pipeline steels for Arctic gas lines and tubular products which should sustain demand for molybdenum at a high level over the next few years. The price was increased from U.S. $3.45 to $4.01 in August.

Gold

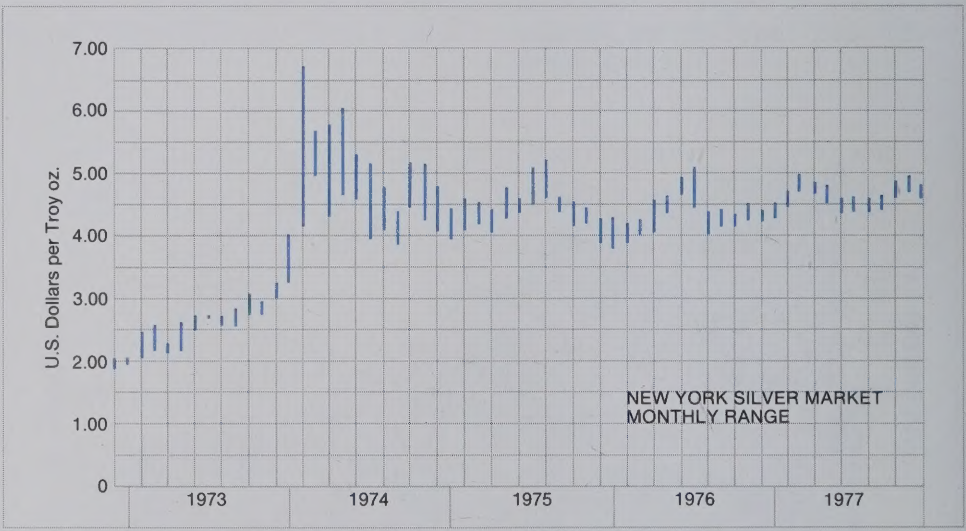
WESTERN WORLD BALANCE — '000,000 Troy Ounces	1975	1976	1977
Supply	36.1	47.5	48.3
Industrial Consumption	30.8	43.7	43.0
Balance	5.3	3.8	5.3

In 1977, the price of gold recovered from U.S. $129 in January to $166 at year end. The main factor was the uncertainty arising from the weakness of the U.S. dollar against European and Japanese currencies but there was also significant demand from the Middle East. The International Monetary Fund's sales of 10,451,600 ounces were absorbed without depressing the market and speculative interest strengthened as the year progressed.

Silver

WESTERN WORLD BALANCE — '000,000 Troy Ounces	1975	1976	1977
Supply —			
Primary —	238	250	260
Secondary	188	204	145
Consumption	402	425	420
Surplus (Deficit)	24	29	(15)

Silver prices improved moderately through the year from a low of U.S. $4.31 in January to a high of $4.97 in March and were $4.75 at year end. Deliveries from India were restricted but overall supplies were adequate for the market. The major unknown factor influencing silver is the availability from secondary sources and Government stockpiles.



Potash

WORLD BALANCE — '000's Short Tons K_2O Years Ending June 30	1975	1976	1977
Production	26,290	25,408	26,907
Consumption	22,352	23,953	25,408
Difference	3,938	1,455	1,499

Shipments of Saskatchewan potash increased by 25% to a level of 5 million tons K_2O in North America and by 22% in export markets. However, production rose 17% to 6.23 million tons and stocks grew by 8%.

The published price for standard grade was unchanged at 55¢ per unit K_2O during the year, while the premium grades moved to 77¢ and 79¢ per unit, although some seasonal discounting applied.

Phosphates

WORLD BALANCE — '000's Short Tons P_2O_5 Years Ending June 30	1975	1976	1977
Supply	28,540	31,460	32,180
Consumption	26,340	28,340	29,250
Surplus	2,200	3,120	2,930

Buoyant spring fertilizer demand in North America and offshore markets, resulted in a recovery of prices, which reached $155 per ton in Canada. This was followed by the abnormally wet fall throughout most of North America which limited field application of fertilizers and resulted in a build-up in producer inventories and lower prices.

Phosphate fertilizer capacity is adequate to meet significant increases in demand until 1980. However, prices have not yet reflected the impact of rising energy costs on major U.S. producers.

Drilling rig near Grand Prairie, Alta.

Exploration and Development

Oil and Gas

Canadian Hunter (75%)

Two additional participants joined in this operation. Kerr Addison Mines Limited (through its wholely-owned subsidiary Agnew Lake Mines Limited) earned a 15% undivided working interest with a $21 million investment in the 1977 program. Petromark Minerals Ltd. is earning a 10% interest in the overall operation with expenditure contributions of $17 million in 1977 and a further $11 million in 1978.

Total expenditures were $57 million, comprising $37 million for land acquisitions and exploration, and $20 million for oil and gas field development. Noranda's share of these expenditures was $19 million, increasing its cumulative investment to $76 million. Noranda's earnings from operations in 1977 were $3.5 million.

A major portion of the land acquisition and exploratory drilling activity was concentrated in the Elmworth gas area southwest of Grande Prairie, Alberta. Gas production in the Cretaceous Falher Sand was discovered by Canadian Hunter in 1976. This has led to additional exploration drilling and sizeable land acquisitions by Hunter and several other companies in an area extending 70 miles east from the British Columbia-Alberta border. Canadian Hunter has varying interests in 346,000 gross acres along the trend and has participated in 16 successful gas wells. Gas sales are contracted to commence in late 1979.

Exploration drilling in northeastern British Columbia resulted in new gas discoveries or significant reservoir extensions in the Julienne, Bernadet, Kobes-Townsend and Dahl areas.

Participation in 129 exploration and development wells resulted in 48 oil and 60 gas producers, an overall drilling success ratio of 84 percent.

Net oil production averaged 739 barrels per day. Average gas production was 8.6 net million cubic feet per day.

Net oil reserves at year-end were 4.1 net million barrels proven and 7.3 million barrels proven plus probable. Net gas reserves were 154 billion cubic feet proven and 245 billion cubic feet proven plus probable. Most of the gas reserves were added by exploratory wells which individually result in relatively small additions. Land holdings are about 1.8 million net acres.

Panarctic Oils (4.49%)

Noranda's share of expenditures was $0.9 million, bringing the expenditure over the past nine years to $8.7 million.

Further offshore delineation of the Hecla and Drake Point gas fields was carried out during the 1977 winter drilling season. No new discoveries were established by 1977 exploratory drilling.

CANADIAN HUNTER
MAJOR OPERATING AREAS

Minerals

In 1977, $21.9 million were spent on exploration and development, about the same as in 1976. Geographical distribution of this expenditure was 45.2% in Canada, 28.5% in the U.S.A., 23.0% in other countries and 3.3% for ocean mining.

A promising lead showing is being drilled in Newfoundland near Sop's Arm. The Gulf-Noranda-Saskatchewan Mineral Development Corp. Joint Venture (Noranda owns 33.3% and Gulf Minerals is operator) has found encouraging uranium mineralization and further drilling is being undertaken.

Noranda Exploration Inc., a wholly owned subsidiary, continued with activity in the U.S.A. In Alaska, the Pan Sound Joint Venture (Noranda owns 33.5% and is operator) discovered a high grade silver-gold deposit with associated base metals. An underground exploration program is under consideration. In California, a gold-copper deposit has been found and partly outlined by drilling. A feasibility study will be started in 1978. In Idaho, a copper-cobalt property has been optioned. Underground sampling and metallurgical studies have been started. A zinc-copper deposit in Wisconsin awaits higher metal prices before further studies are undertaken. In New Mexico, Noranda acquired the major interests in Section 19 T.13N R8W of the Fernandez Joint Venture from Gulf Minerals and Keradamex. A drilling and sampling program has intersected ore grade uranium in a majority of the 22 holes drilled. Noranda's interest in the rest of the Fernandez Joint Venture is being maintained.

In Chile, an agreement was signed with ENAMI to explore, study and, if attractive, to develop the Andacollo porphyry copper deposit. Exploration drilling has commenced as have metallurgical and engineering studies. The Australian Government announced on August 25, 1977 that it decided in favour of uranium mining subject to stringent domestic and international controls. Since then, Noranda Australia has embarked on engineering, metallurgical and environmental studies on the Koongarra deposit. The properties held in Saudi Arabia and Cyprus were drilled and evaluated but no further work is justified. Additional lead-zinc mineralization was found at Ballinalack in Ireland. The size and grade of the new zone are being investigated by deep diamond drilling.

Exploration offices are being maintained in Canada, the U.S.A., Australia, Ireland, Chile and Zambia.

In ocean mining, Phase II of the manganese nodule project continued into its second year of activities. The Group was expanded to include British Petroleum. Design verification testing for a method to pump nodules to the surface of the ocean resulted in the construction of a prototype pump for large scale tests. A method of recovering manganese from the nodule tailings was perfected on a laboratory scale.

Research

The Noranda Research Centre has been successful in the development of special sensors for monitoring and computer control in the concentrators operated by the Group. These devices have allowed increased throughput and reduced reagent costs. A new helmet, face shield, and cap lamp for underground miners designed at the Centre jointly with the Mining Research Organization of Canada will be field tested in 1978. The project with Electrolyser Corporation to develop large scale electrolytic cells for the production of hydrogen is achieving the planned technical objectives. Discussions to exploit this development commercially are under way. The Centre made a significant contribution in the early stages of Canada Wire's venture into fibre optic communication channels.

Programs to develop technology continue in such areas as noise abatement, industrial hygiene, dust collection and other environmental controls, as well as the unending search for new products and improved efficiency at existing operations.

At the year end, 143 people, of whom 56 are professionals, were employed at the Centre. Total spending was $4,450,000.

Environmental Control

The number of operations conducting annual biological surveys as a control indicator increased substantially. The capability to perform fish lethality tests as recommended by regulatory agencies has been added to the Noranda Research Centre laboratory. The continuing program of noise abatement, including surveys and design of controls to improve the working environment, has been enlarged to assist at many mining, refining and manufacturing locations.

Water treatment plants, employing plate clarifiers, are being constructed at Brunswick Mining on the mine water and at Mattabi on the tailings pond effluent. These plants will be in operation early in 1978.

A water effluent control plan has been proposed for both the operating and inactive mining sites in the vicinity of Noranda, Quebec. It includes diversions of fresh water around contaminated areas, vegetating of tailings dams, recycling of waste water to process and the construction of a plant to improve the quality of the outflow. The completion of the various phases would extend over several years.

The research program on vegetation, which was initiated by the Horne Division at the Crop Science Department of the University of Guelph, is entering the fourth year of a five year program. The technology for vegetating the Noranda tailings storage areas has been developed by growth room and field tests. The program has been broadened for application at other operating sites within the Noranda Group.

Since 1971, capital expenditures for emission and effluent control including the building of acid plants, exceed $95 million.

Summary

Revenues at most of the base metal mines were depressed and profits severely curtailed because of continued low copper prices, declining zinc prices and a low level of zinc consumption.

In order to withstand the prolonged period of depressed markets, increasing emphasis has been placed on efficiency of operations. At Gaspé and Brunswick there have been reductions in manpower, while maintaining or increasing output. Despite improvements, Gaspé produced at a significant net loss. Operation of the oxide leach and precipitation circuit, which is still not functioning properly, has been suspended. Its resumption will depend on the findings of a technical group currently studying the problem. Productivity improved modestly at the Geco Division but at Mattagami Lake Mines production was limited due to repairs to an ore pass and the extremely poor zinc markets.

Production at Orchan was suspended for one month because of a buildup of inventories of zinc metal and concentrate. The expansion program at Brunswick to increase the mining capacity from 9,400 to 11,000 tons of ore per day was deferred in September and will be rescheduled when justified by market conditions.

Central Canada Potash established record output with good operating costs but unreasonable taxes resulted in a net loss. Brenda had excellent production and earnings increased because of strong molybdenum markets.

The Tara mine in Ireland experienced labour disruptions during startup but was producing at year end. The Agnew Lake uranium mine in Ontario, which continues to have startup problems, is expected to be onstream in 1978.

The Horne and Gaspé smelters operated slightly below capacity because of a shortfall in the supply of concentrates. At the Horne smelter, the conversion of the reverberatory furnaces from dry to wet charge was completed in September with the elimination of the roasters, resulting in a significant reduction in dust emissions.

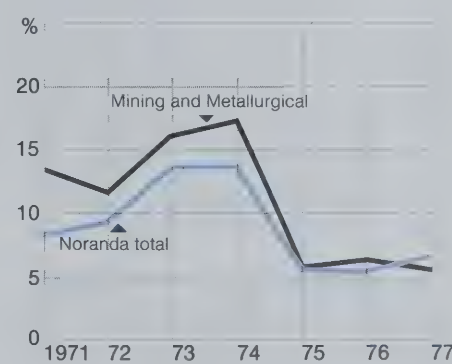
The first installation, outside of Noranda, of the Noranda Continuous Smelting Process, licensed to Kennecott Copper Corporation in Utah, U.S.A., started up successfully during the last quarter of 1977.

Canadian Copper Refiners operated well throughout the year except for an eighteen day shutdown caused by a strike.

Due to a worldwide surplus of zinc smelting capacity, Canadian Electrolytic Zinc operated at less than 70% of its rated capacity. The performance of the new cellhouse was up to expectations.

In a strong lead market, the Brunswick lead smelter in Belledune, N.B., attained a record production year and maintained an excellent safety record. A new dust collection unit has significantly improved the working environment.

Earnings (before common costs) as a % of Net Capital Employed



Noranda — Interests

Summary of Canadian Mine Production

	Ore Treated (000 tons)	Product: Copper (tons)	Zinc (tons)	Lead (tons)	Silver (000 oz.)	Gold (ounces)	Molybdenum (000 lbs.)	Muriate of Potash (000 tons)
Noranda*	19,374	104,766	34,800	386	1,581	23,000	4,482	
Brenda	10,620	17,800					8,400	
Brunswick	3,455	4,300	216,400	69,300	4,278			
Central Canada Potash	3,771							1,451
Kerr	239					106,100		
Mattagami Lake**	2,073	13,090	139,990	4,290	2,699			
Orchan	560	2,100	31,100		193			
Pamour Porcupine	1,997	3,090			63	164,000		
Placer ***	26,135	66,047					15,274	

**Geco, Boss Mountain, Bell Copper, Gaspé, **Mattagami, Mattabi, ***Endako, Craigmont, Gibraltar*

Summary of Smelting and Refining Production

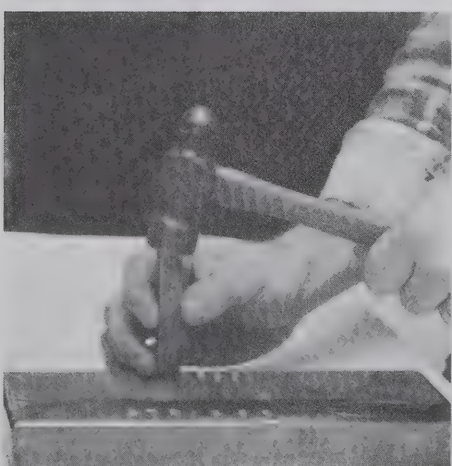
	Product: Copper (tons)	Zinc (tons)	Lead (tons)	Silver (000 oz.)	Gold (ounces)	Cadmium (pounds)
Horne Smelter	243,000					
Gaspé Smelter	75,800					
Canadian Copper Refiners	383,000			21,986	372,000	
Canadian Electrolytic Zinc		155,550				928,200
Brunswick — Smelter			56,400	3,458		

Operations

Abbreviations used —

Cu copper
Zn zinc
Pb lead
Ni nickel
Ag silver
Au gold
Mo molybdenum
Hg mercury
K_2O potassium oxide
Cd cadmium
U_3O_8 Uranium oxide
o.p.t. — ounces per ton

1.



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3.

Horne Division
SMELTING

	Production		
	Material Smelted (Less Flux)		Cu Content of Anodes Produced
	Noranda (Tons 000)	Custom (Tons 000)	(Tons 000)
1977	182	798	243
1976	176	799	229
1975	287	735	231
1974	341	839	269
1973	325	825	260

Concentrate receipts were less than plant capacity and resulted in several shut downs of various smelting units. Production was also interrupted frequently as part of the continuing program to maintain ground level sulphur dioxide concentrations below recommended guidelines. Total lost production was approximately 80,000 tons of concentrate.

Following conversion to wet charge operation the No. 2 reverberatory furnace was started up in September and ran well the rest of the year.

The Noranda Continuous Smelting Reactor operations improved steadily as did overall smelter metallurgical performance.

An important reduction in the frequency of compensable accidents was achieved with the 1977 record among the best reported for many years.

4.

Geco Division

	Tons (000)	Grade % Cu	% Zn	Ag o.p.t.
Ore Treated	1,754	1.94	2.62	1.22

CONCENTRATES PRODUCED
Metal Content

Cu Tons	Zn Tons	Pb Tons	Ag Oz.
31,700	34,800	386	1,581,000

	Tons (000)	Grade % Cu	% Zn	Ag o.p.t.
MINERAL INVENTORY	25,600	1.88	3.73	1.53

The production of ore and of copper and zinc in concentrates was slightly higher than for 1976.

The effects of inflation on production costs were partially offset by reliance on mechanized bulk mining methods. With lower labour turnover and decreased recovery of ore from pillar remnants, productivity in tons of ore produced per manshift worked was improved by 4%. However, low metal prices and higher unit costs contributed to the reduction in proven mineral inventory.

The introduction of a modular training system to cope with the continuing shortage of experienced miners and an unsatisfactory safety performance was well accepted and should have a positive countering effect.

Capital expenditures were limited to cost saving mining equipment. The onstream analysis system in the mill is improving process control and mineral recovery as expected.

1. *Blacksmith forging a steel 'gad' used as a wedge for splitting wood or rock.*

2. *Weighed to accuracy of 1/1,000th of an ounce the weight is hand-stamped onto a 400 oz. gold bar.*

3. *Sowing seed to grow vegetation on tailings area of Horne mine.*

4. *Draftsman works on scale reduction of geology plans.*

Mines Gaspé

MINING ORE TREATED	Tons (000)	Grade Cu %
Needle Mountain	1,376	1.13
Copper Mountain	10,807	0.46
MINERAL INVENTORY		
Needle Mountain		
Proven	6,923	1.15
Probable	5,368	1.16
Copper Mountain		
Sulphide—Proven	115,593	0.401
Probable	66,468	0.338
Oxide—Proven	25,194	0.441
Probable	4,751	0.406

SMELTING

	Concentrates		Production	
	Gaspé (Tons)	Custom (Tons)	Cu (Tons)	Acid (Tons)
1977	235,000	93,000	75,800	168,800
1976	231,900	91,800	73,600	192,900
1975	205,300	110,500	73,200	174,900
1974	190,500	90,300	69,700	154,700
1973	107,400	99,800	49,300	12,300

Production from the Needle Mountain underground mine was some 198,000 tons less than for 1976 because fewer stopes were available for mining. Development work was resumed to provide access to new stopes and exploration was reactivated to supplement the inventory of probable and proven ore. Some 12 million tons of 1.5% copper ore remain in pillars but have been deleted from the inventory because they will not be recoverable in the near future.

Stripping of waste rock in the Copper Mountain pit was increased by one million tons and ore production by 102,000 tons. Additional low grade stockpile material was treated to maximize utilization of mill capacity.

The recovery of 2,224 tons of molybdenite concentrate was a record. The vat leaching of oxide ore to produce cement copper started on a production scale in May but was suspended in November to research a practical procedure for lowering the iron content of the plant effluent.

Stringent controls were effected to limit the increase in minesite costs and the number of employees at year end was 9% lower than for 1976.

Bell Copper Division

ORE TREATED

Tons	Grade % Cu	Grade Au o.p.t.
4,860,000	0.428	0.009

CONCENTRATES PRODUCED

Tons	Metal Content Cu Tons	Metal Content Au Oz.
65,500	17,500	23,000

MINERAL INVENTORY

Tons	Grade % Cu	Grade Au o.p.t.
24,990,000	0.492	0.012

Both the tonnage milled and waste stripping were below plan due to lower than anticipated availability of mining equipment. A serious shortage of skilled tradesmen developed during the second half of 1977, adversely affecting the preventive maintenance program. In the final quarter a new 11-cubic yard shovel and two 85-ton haulage trucks were assembled and placed in operation. The proposed expansion of mine and concentrator production was deferred due to the current weak economic conditions and low copper price.

Boss Mountain Division

ORE MINED	Tons	Grade % Mo
	577,170	0.216

METAL CONTAINED IN CONCENTRATE PRODUCED

	lbs. Mo
	2,189,870

MINERAL INVENTORY	Tons	Grade % Mo
Proven	340,000	0.20
Probable (drill-indicated)	2,840,000	0.21

Despite lower production of ore and of molybdenum in concentrate revenue increased due to higher prices.

Underground exploration since June confirmed additional ore potential and, while the remaining proven ore will be mined out by mid 1978, some production from new sources should be available by then. With the prospect of continuing strong markets for molybdenum, the extension of operations at a slightly higher milling rate is expected for another four years.

Canadian Copper Refiners

REFINED METAL PRODUCTION

	Copper (Tons)	Silver (Oz)	Gold (Oz)
1977	383,000	21,986,000	372,000
1976	387,000	22,501,000	336,000
1975	395,000	19,835,000	346,000
1974	427,000	19,413,000	352,000
1973	373,000	14,599,000	351,000

A legal strike interrupted refinery production for eighteen days in April. This caused an accumulation of 18,000 tons of copper anodes which was treated throughout the remainder of the year.

Some of the structures housing the tankhouse at the refinery are more than forty years old and a major program of roof replacement and structural steel rehabilitation was started. About $3,300,000 was spent on this phase of the plant renovation and expenditures of the same order are planned for 1978. In addition, a reverberatory furnace used to melt and cast anodes is being replaced by a shaft melting furnace at a cost of about $2,000,000.

Canadian Electrolytic Zinc

(22.7% Direct: 34.5% Indirect)

Metal Production	Zn Tons	Cd Lbs.
1977	155,550	928,200
1976	125,800	380,000
1975	117,700	401,000
1974	134,800	772,000
1973	148,800	598,000

Zinc production was substantially below annual capacity of 225,000 tons. The plant was shut down for thirteen days beginning December 21st but despite reduced output, stocks were excessive at year end.

Brenda Mines (50.9%)

EARNINGS	1977	1976
	$9,480,000	$5,490,000

ORE TREATED	Grade	
Tons	% Cu	% Mo
10,620,000	0.190	0.047

CONCENTRATES PRODUCED	Metal Content	
Tons	Cu Tons	Mo Tons
68,000	17,800	4,200

MINERAL INVENTORY	Grade	
Tons	% Cu	% Mo
108,677,000	0.165	0.040

The tonnage treated was slightly below plan but higher head grades and improved recoveries resulted in copper and molybdenum production in excess of last year. The mineral inventory declined by almost the tonnage treated.

Copper concentrate production, commencing in April, was sold in Japan and Korea at L.M.E. prices. Molybdenum concentrates were delivered to roasting facilities in England and Belgium for ultimate delivery to various European consumers.

Operating costs rose due to inflation and the added cost of mining from a deeper open pit. Molybdenum accounted for 70% of the net revenue. Dividends paid totalled $0.49 per share.

Brenda acquired a 1% net profit interest in 115,680 acres of offshore petroleum permits in the Beaufort Sea through a $5 million participation in Dome Petroleum Limited's 1977 drilling program. Brenda also purchased an average 25% working interest in nearly 128,000 acres of semi-proven natural gas lands from Sabre Petroleums Ltd. for $6.3 million. These properties, located in the Greater Cache area of east-central Alberta are partially developed with 30 gas wells and production scheduled to commence in late 1978.

Brunswick Mining & Smelting (64.1%)

EARNINGS	1977	1976
	$2,395,000	$7,541,000

MINING	Tons (000)	Grade % Pb/Zn
Ore Mined	3,455	10.9

CONCENTRATES PRODUCED	Metal Content		
Zn Tons	Cu Tons	Pb Tons	Ag Oz
216,400	4,300	69,300	4,278,000

MINERAL INVENTORY

	Tons (000)	Grade % Zn	% Pb	% Cu	Ag o.p.t.
Zn/Pb					
No. 12 Mine					
Proven	70,656	9.15	3.69	0.30	2.78
Probable	36,411	9.35	3.93	0.35	2.87
No. 6 Mine					
Proven	916	7.25	2.62	0.28	2.48
Cu					
No. 12 Mine					
Proven	9,474	1.13	0.40	1.11	0.85
Probable	4,620	1.57	0.54	1.12	1.39

The mine operated at record production levels and the concentrator experienced improved recoveries but earnings declined as a result of a 25% reduction in the zinc price. In order to maintain a stable financial position, the expansion of the capacity of the No. 12 mine and plant to 11,000 tons per day was suspended. Capital expenditures on the expansion to date are $38.6 million.

SMELTING

Production	Pb Tons	Ag Oz	Sulphuric Acid Tons
1977	56,400	3,458,000	152,100
1976	51,400	3,004,000	119,300
1975	50,900	2,195,000	139,700
1974	44,200	2,085,000	117,000
1973	34,450	1,255,000	100,200

The lead smelter achieved record production levels during the year and benefitted by higher lead prices. The smelter treated 169,000 tons of Brunswick mine and 30,000 tons of purchased concentrates. A new air filtration plant to improve ventilation and dust control throughout the smelter was installed.

Central Canada Potash (51%)

	Tons	Grade
Ore Mined	3,771,000	26.9% K_2O
Muriate Produced	1,451,000	
Reserves	575,000,000	27.0% K_2O

The linear advance for the continuous mining machines was 38 miles for a total of 234 miles since underground extraction began in 1969.

Production and shipments attained record levels and product inventory increased by 50% to 195,000 tons. With the expanded compaction plant in operation, there is capacity to supply 1.5 million tons per annum of the more marketable premium grade coarse and granular products.

In January the Saskatchewan Court of Appeal set aside the earlier trial judgement which had found the Province's prorationing scheme to be ultra vires and beyond the competence of the Saskatchewan Legislature and had awarded damages to the Company. The further appeal of this matter by the Company and by the Attorney General for Canada was heard before the Supreme Court of Canada in December, with judgement reserved.

The government owned Potash Corporation of Saskatchewan, having evaluated the assets of CCP in December 1976, advised the Company in June that it did not plan to make an offer for its acquisition.

Operation at 97% of capacity for the calendar year produced a profit before taxes of $25.9 million. Provisions for and payments of taxes to the Governments of Canada and Saskatchewan resulted in a net loss of $1.3 million. Representations to have the excessive and confiscatory Saskatchewan potash reserve tax reduced have had no results to date, but will continue.

Pamour Porcupine Mines (48.8%)

EARNINGS (LOSS)	1977	1976
	$128,000	($6,179,000)

MINERAL INVENTORY	Tons (000)	Grade Au o.p.t.	Ag o.p.t.	% Cu
No. 1 Mine	1,542	0.09	—	—
No. 3 Mine	136	0.24	—	—
Schumacher Division				
— Copper Section	1,300	0.03	0.08	0.57
— Gold Section	326	0.25	—	—
Ross Mine	385	0.15	0.15	0.12
Total	3,689	0.09		0.21

ORES TREATED	Tons (000)	Grade Au. o.p.t.	Ag. o.p.t.	%Cu
No. 1 Mill	994	.095	—	—
Schumacher Mill	1,003	.091	.094	.355
Total	1,997	.093	—	.178

METAL CONTENT OF BULLION AND CONCENTRATE PRODUCED

Au Ozs.	Ag Ozs.	Cu Tons
164,267	63,115	3,093

The sustained improvement in the price for gold gave cause for reversal of the previous curtailment program, prompted a fresh emphasis on gold production, and modest resumption of some exploration and development projects.

Total tonnages of ore treated in the mills increased by some 6% with a high input of lower grade material from surface mining. Gold production increased 7% and the number of employed persons increased by 12% to 958.

Langmuir Property (55%)

	Tons	Grade Ni %
Ore Treated	222,665	1.22
Mineral Inventory	320,500	1.26

Metal Contained in Concentrate Produced 2,159 tons of Ni

Changes in mine and market conditions resulted in lower production. The quality of the ore in the lower extremities of the main No. 2 zone proved erratic and production was limited by ground conditions and fewer work places. Underground examination of the No. 1 zone was delayed by water flows and development in the south or No. 3 zone was disappointing. With deterioration of the markets for nickel, exploration work was suspended and production will be terminated early in 1978.

Orchan Mines
(45.1% Direct, 6.4% Indirect)

EARNINGS	1977	1976
	$1,534,000	$1,617,000

ORE TREATED

Tons	Grade % Zn	% Cu
559,800	6.35	0.54

MINERAL INVENTORY*	Tons (000)	Grade % Zn	% Cu	Ag o.p.t.
Orchan — Proven	639	6.2	0.8	0.7
Norita — Proven	330	5.9	0.5	0.7
Norita — Probable*	1,100	6.6	0.6	0.7
Radiore No. 2 — Probable*	153	1.0	2.0	—
P.D. Division — Probable*	1,545	4.5	0.9	0.5

*drill-indicated

METALS CONTAINED IN CONCENTRATES PRODUCED

Zn tons	Cu tons	Ag ozs.
31,100	2,100	192,700

Earnings were reduced due to weak market conditions for zinc and because production was suspended for 5 weeks beginning December 2 to avoid excessive build-up of inventory.

Ore treated in the Orchan concentrator included 331,000 tons from the Norita Division.

Site preparation work at the P.D. property was suspended in March pending completion of the all weather access road by the Province of Quebec. It had not reached the property at year end. Further work on the low grade zinc-copper deposit awaits improved metal markets. Exploration on claim groups in the area continued.

Alberta Sulphate

	Tons	
Production	38,200	sodium sulphate
Reserves	2,500,000	
Recoverable Product	1,200,000	

Production and sales of sodium sulphate were lower due to low salt concentrations in the lake system and a soft market. The acquisition of a dredge for lake mining has reduced production dependence on climatic conditions and will permit a higher recovery of the reserves.

Kerr Addison Mines
(41.2% Direct; 2.3% Indirect)

EARNINGS	1977	1976
	$6,186,000	$6,774,000

Earnings include a $1.4 million gain on sale of investments which was more than offset by a $0.5 million writedown on certain property and a $1.4 million provision for environmental costs.

Production of uranium at the 90% owned Agnew Lake mine has been substantially below expectations, as the extraction rates indicated in previous test results have not been achieved. Work continues towards determining whether the extraction rates obtained during the test work can be duplicated on a production scale.

Production at the 60% owned Blue Hill Joint Venture in Maine, U.S.A., was suspended in October, when mining became uneconomic due to low zinc and copper prices.

By expending $21 million, Agnew Lake earned a 15% undivided interest in Noranda's gas and oil properties and assets which are operated by Canadian Hunter Exploration Ltd.

PRODUCTION	Interest	Ore Milled Tons (000)	Metal Content in Concentrates
Kerr Addison	100%	239	106,100 oz Au
Mogul of Ireland	75%	931	53,700 Tons Zn 15,100 Tons Pb
Blue Hill	60%	145	7,700 Tons Zn 1,280 Tons Cu

MINERAL INVENTORY	Tons (000)	Grade	
Kerr Addison	520	0.46 oz Au/Ton	
Mogul of Ireland	3,615	5.4% Zn	3.1% Pb
Agnew Lake	11,200	1.09 Lbs. U_3O_8/Ton	

Belledune Fertilizer

The level of operations at the plant was adjusted to consume only the sulphuric acid output of the adjacent lead smelter of Brunswick Mining & Smelting and to produce about 100,000 tons of diammonium phosphate. The narrow margin between present raw material costs and the product selling price continues to threaten the viability of this operation.

Mattagami Lake Mines
(34.1% Direct; 8.5% Indirect)

CONSOLIDATED EARNINGS	1977	1976
	$11,648,000	$14,985,000

ORE TREATED

	Grade			
Tons	% Zn	% Cu	Ag o.p.t.	Au o.p.t.
1,043,000	6.6	0.52	0.90	0.014

CONCENTRATES PRODUCED

	Metal Content	
Tons	Zn Tons	Cu Tons
136,000	63,800	4,100

MINERAL INVENTORY

	Grade			
Tons	% Zn	% Cu	Ag o.p.t.	Au o.p.t.
8,595,000	7.2	0.58	0.90	0.015

Metallurgical results improved; however, mine production was limited due to extensive repairs required to an ore pass and an eight day shut down in December because of poor zinc markets. Mineral inventory declined by the tonnage milled and deep exploration work continued on the property throughout the year.

The compensable accident rate was 2.6 per million manhours worked, the lowest for the class in Quebec. A two-year collective agreement was negotiated in June.

The St. Lawrence Fertilizers plant remained closed all year due to the poor market for its products.

Lyon Lake Division
Development work was suspended in the fourth quarter pending better market conditions.

MINERAL INVENTORY

	Grade				
Tons	% Zn	% Cu	% Pb	Ag o.p.t.	Au o.p.t.
4,033,000	6.66	1.15	0.63	3.39	0.01

Mattabi Mines
(60% owned by Mattagami Lake Mines)

ORE TREATED

	Grade			
Tons	% Zn	% Cu	% Pb	Ag o.p.t.
1,030,000	8.40	1.01	0.84	3.54

CONCENTRATES PRODUCED

	Metal Content			
Tons	Zn Tons	Cu Tons	Pb Tons	Ag Ozs.
188,200	76,190	8,990	4,290	2,698,600

MINERAL INVENTORY

		Grade			
	Tons (000)	% Zn	% Cu	% Pb	Ag. o.p.t.
Underground	2,200	7.37	0.61	0.78	2.84
Pit	2,900	7.05	0.57	0.71	2.72
Sub-ore	1,100	Awaiting more favourable metal prices			

Production was limited due to the poor markets for zinc concentrate and operating costs increased about 7% over 1976. However, in the third quarter, costs declined with a planned reduction in waste rock stripping requirements. Metallurgical recoveries were higher with significant increases for lead and silver. The accident frequency per million manhours worked was low and labour turnover improved.

Empresa Fluorspar
(74.8% direct; 14.6% indirect)

Markets for fluorspar ore remained depressed and shipments from 49%-owned Cia Minera Las Cuevas, in Mexico, totalled only 90,000 tons, compared to 126,000 tons in 1976. Concentrate shipments totalled 69,000 tons.

Net earnings, reported on the basis of dividends received from Las Cuevas, were $1.1 million in 1976. No dividends were received in 1977 and, due to exchange adjustments, there was a net loss of $52,000.

Chile Canadian Mines (49%)
A further loss was incurred on production of about 570 tons of copper during the first half and, in the absence of any sign of substantial price improvement, this low-grade mine in Northern Chile was closed on June 30th.

Placer Development
(31.3% Diect; 1% Indirect)

EARNINGS	1977	1976
	$20,753,000	$17,960,000

The improvement in earnings was due to strong demand and increased prices for molybdenum. Earnings from copper concentrate, the company's other major product, were reduced by the low price of copper. The results in 1976 included a non-recurring credit of $3,040,000 following reduction of the Philippine withholding tax on dividends from Marcopper Mining Corporation.

During 1977 the company acquired all of the outstanding shares of Canadian Export Gas and Oil Ltd. at a total cost of approximately $54,000,000.

OPERATIONS

		Production	
	Interest	Ore Milled Tons (000)	Metal Content in Concentrate
Endako Mines Division	100%	10,014	7,637 Tons Mo
Gibraltar Mines	71.9%	14,071	43,390 Tons Cu
Marcopper Mining	40%	10,071	52,078 Tons Cu
McDermitt Mine	51%	211	1,145 Tons Hg

MINERAL INVENTORY	Tons (000)	Grade %
Endako Mines Division	232,000	0.082 Mo
Gibraltar Mines	286,000	0.36 Cu
Marcopper Mining	74,900	0.58 Cu
McDermitt Mine	2,663	0.50 Hg

Empresa Minera de El Setentrion (60.5%)
Progress on the new shaft to regain access to reserves in the flooded section of the mine, in Nicaragua, has been necessarily slow. Mining continues to be restricted to diminishing lower-grade reserves and treatment of 132,000 tons of ore averaging 0.38 oz. gold per ton in 1977 reduced proven reserves to 77,000 tons of similar grade.

The decrease in gold production, partially offset by the higher price, reduced net earnings to $1.3 million compared to $1.6 million in 1976.

Craigmont Mines
(19.7% Direct; 14% Indirect)
Year Ended October 31, 1977

EARNINGS	1977	1976
	$2,359,000	$3,919,000
ORE MILLED	Tons	Grade % Cu
	2,050,000	1.17
CONCENTRATES PRODUCED		Metal Content
		22,657 Tons Cu
MINERAL INVENTORY	Tons	Grade % Cu
	2,725,000	2.07

The mineral inventory is nearly exhausted and mining is expected to continue on a gradually diminishing basis into the first quarter of 1979 when operations will cease.

Tara Mines
(75% owned by Tara Exploration and Development)

ORE TREATED

	Grade	
Tons	% Zn	% Pb
789,700	9.9	2.0

CONCENTRATES PRODUCED

	Metal Content	
Tons	Zn Tons	Pb Tons
145,800	71,200	10,700

MINERAL INVENTORY (Undiluted)

	Grade	
Tons	% Zn	% Pb
67,300,000	11.0	2.4

The concentrator commenced startup activities in June and has proceeded satisfactorily. Mining was seriously disrupted by a prolonged "Go Slow" by underground employees, which culminated in a six weeks stoppage during the fourth quarter. As a result, some 58% of the ore milled came from stockpile. Discriminatory picketing by workers in Dublin port, who had no dispute of any type with Tara, hampered rail delivery of concentrates to the shipment facilities at the port. However, this dispute was settled and port operations returned to normal in November. By year-end 90,300 tons of zinc concentrates and 16,000 tons of lead concentrates had been shipped under contracts to smelters in Western Europe.

Other properties

Northwest Quebec

MINERAL INVENTORY	Tons (000)	Grade % Cu	% Zn	Au o.p.t.	Ag o.p.t.
Chadbourne	1,100	—	—	0.11	—
Magusi	1,520	1.0	4.8	0.04	1.0
New Insco	790	2.7	—	—	—
Les Mines Gallen (West Macdonald)	2,758	0.15	4.5	0.03	0.7

Increased prices for gold in the latter part of 1977 prompted re-examination of the mineralized zone on the Chadbourne property and the feasibility of production under current circumstances is being studied.

Review of data for the Magusi property confirmed that substantially higher copper and zinc prices are required to provide reasonable hope for an economic return.

Development of the New Insco property was suspended in April and production from the mine will not begin until the markets for copper are much improved. Some 90,160 tons of stockpiled development ore from preparation of the underground and pit sections of the ore zone were treated in the Horne mill to produce 10,729 tons of copper concentrate.

In accordance with the Option Agreement for the West Macdonald property, a new company, Les Mines Gallen, was formed to develop a plan for production. However, when market conditions for zinc deteriorated rapidly in the last 6 months, the planning, test work and studies were rescheduled for completion at a later date. It is unlikely that active development and preparation for mining will resume until the price for zinc rises substantially.

Goldstream Division
The property, located 58 miles north of Revelstoke, B.C., contains some 4,000,000 tons of ore with an average grade of 3.6% copper and 2.6% zinc.

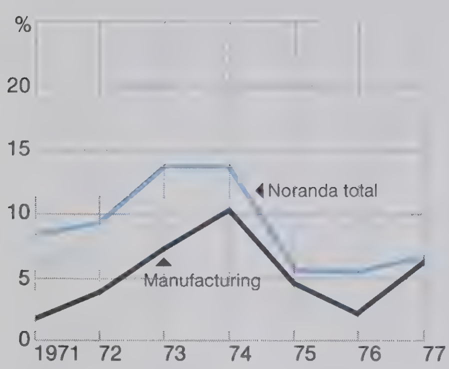
Environmental studies to obtain a water use permit, and an evaluation of power supply alternatives are continuing.

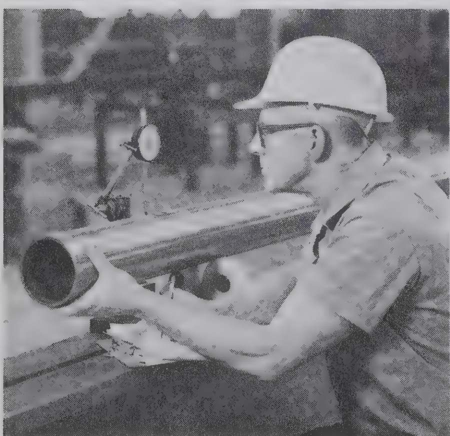
Noranda Phosphate
The Pine Level Project, a joint venture initiated in 1975 by Noranda (51%) and New Jersey Zinc, increased its holdings in DeSoto County, Florida, from 7,500 to 8,200 acres. Drill-indicated reserves are 35 million tons of recoverable phosphate rock. Environmental studies to obtain mining and waste disposal permits continue.

New Mexico Potash
Noranda Exploration, Inc. holds 21,000 acres in Lea County, New Mexico with drill-indicated recoverable ore reserves of some 110 million tons averaging more than 15% K_2O equivalent.

Manufacturing

Earnings (before common costs) as a % of Net Capital Employed





Dimensional inspection of pressure tube.

Summary

There was not much to cheer about in Noranda's manufacturing activities in 1977 except for Noranda Aluminum, Canadian wire rope and the unstinting efforts of the employees. Import competition worsened already difficult markets in Canada until later in the year when the Canadian dollar retreated to a more appropriate value.

The general level of activity in markets served in Canada was depressed, resulting in significant unused plant capacities and low profitability. This made it imperative to restrict capital expenditures to essential maintenance and modernization as well as completion of projects begun in earlier years.

Personnel and management structures received more attention than formerly as hard times demand the maximum in productivity and performance. As a result, by year's end, Noranda Manufacturing had been consolidated into three management groups: Canada Wire, including the plastics companies, based in Toronto; Noranda Metals, including the foundry and wire rope companies, based in Montreal, and Noranda Aluminum, including fabrication and distribution, based in the United States.

In the aggregate, these activities which represent net assets of $521 million produced $709 million of sales in 1977 compared to $575,000,000 in 1976. In volume terms, the Canadian plants operated at 63% of capacity and total hours worked were 133,000 less than in 1976.

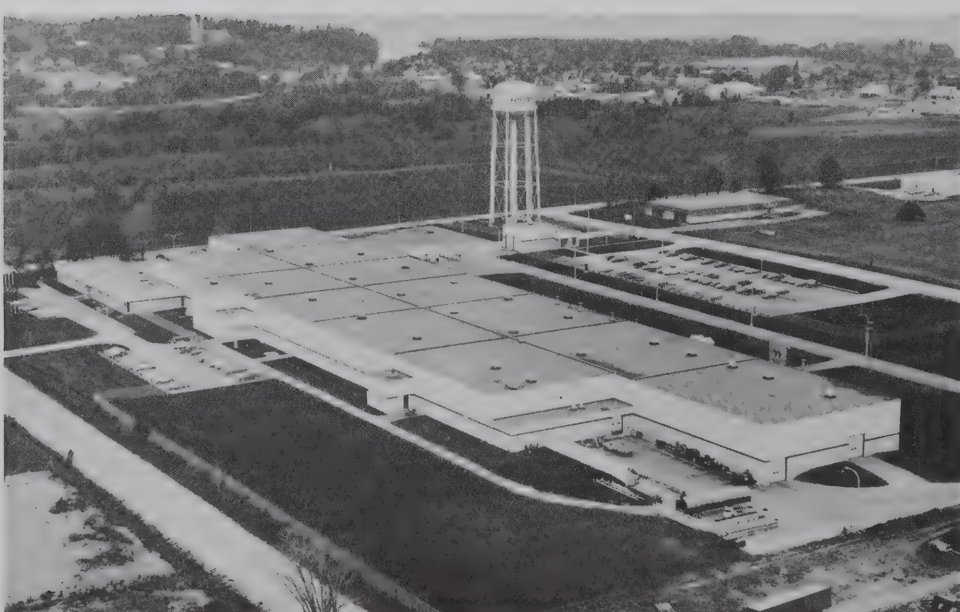
International operations outside the U.S. recovered somewhat from foreign exchange related losses in 1976 but writedowns in Spain, Iran and Colombia were costly. The primary aluminum plant in Missouri operated at full capacity and produced very satisfactory profits.

There are 31 collective labour agreements in the manufacturing group. 14 of these were renegotiated during 1977, in settlement of which 2 units chose to strike. This resulted in a loss of 24,440 man hours of work in addition to those lost due to poor business conditions.

	Metal Consumption — tons	
	1977	1976
Canada Wire	65,400	70,000
Noranda Metal	44,000	43,000

	Product Shipped — tons	
	1977	1976
Noranda Aluminum and Norandex	177,000	145,000
Grandview	11,000	25,000
Quebec Iron	37,000	28,000
Wire Rope and Bridon	41,000	38,000

N.M.I., Special Metals Division, Arnprior, Ont.



Canada Wire Group

Canada Wire's principal markets, particularly utilities, were very restricted due to the overall low level of capital spending in Canadian basic industry. While the Company's competitive position remained largely intact, its profit performance was well below target due to significantly lower demand and thus under-utilization of capacity.

New capital spending was limited to completion of the equipment wire plant in Orangeville, Ontario, and expansion of the Quebec City facilities for trans-

mission wire. Otherwise, only essential maintenance and efficiency improvement expenditures were undertaken.

As a major consumer of plastic materials for insulating purposes Canada Wire took over management responsibilities for Noranda's plastic company, **Grandview Industries**, in mid-year. The plastic pipe and plastic compounding businesses remained unprofitable. However, foam plastics, fittings and fiberglass fabrication sustained Grandview. A new joint venture was formed for the manufacture of bottle carriers.

In the area of technology and development, Canada Wire focussed its main activity on fibre optic development originally initiated by the Noranda Research Centre. The use of glass fibre to transmit data and voice signals via light waves appears to have great significance in the future of telecommunications on which Canada Wire depends for much of its present business. Canstar Communications was formed as the corporate vehicle for this activity and the Company has acquired 10.7% of Valtec Corporation, a U.S. company with certain essential fibre optic and related system capability. The Company's development in this area is being evaluated in three major Canadian test installations.

Noranda Metals Group

The brass mill business continues at the depressed and unprofitable 70% capacity level as in 1976. The Canadian market which could be satisfied by one large brass mill is served by seven. This excessive and inefficient proliferation of production facilities can only be utilized by improved export performance, a higher level of Canadian capital spending or both.

Noranda Metal has focussed on a rationalization of the output of its plants in Montreal East, Que., Fergus, Ont., and New Westminster, B.C., with particular emphasis on productivity at Fergus which is the most modern brass sheet mill in Canada.

The new Special Metals plant at Arnprior, Ontario, which manufactures tubing for nuclear and power boiler use, produced mainly for export orders. Domestic contract drawdowns were delayed by the well publicized stretchout of Canadian utilities' spending, but by year-end, order backlogs were sufficient to fill the plant capacity for two years as a result of export business.

Noranda Metals' two foreign ventures had mixed success. The U.S. operation at Newtown, Connecticut, producing thin wall and fine gauge tubing, had an excellent year, while the joint venture tube mill in Colombia was pronounced a failure and is being liquidated.

With the permanent closure of the old foundry at Noranda, **Quebec Iron Foundries** operations are now concentrated in modernized and expanded foundry facilities in Mont Joli, Que., and a new scrap automobile shredding facility at Scoudouc, N.B. The shredding plant was completed and opened in mid-year amidst the worst depression in steel scrap for years. Any recovery in steel-making should give this operation an attractive return. Development of a new alloy for grinding media appears to have offset the competition from forged steel and recovery of lost markets is occurring satisfactorily. Sale of mill liners is depressed by the low level of Canadian mining activity.

Wire Rope Industries, 51.4%-owned, faced soft markets due to lack of construction activity as well as severe competition from the Far East in Western Canada. Imports of finished rope, at prices below the cost of Canadian raw material, resulted in the commencement of anti-dumping action by the Canadian government. Nevertheless, aggressive marketing permitted this Company to achieve an increased share of the market and maintain its profit goals. This achievement was helped by the diversity of product offerings which, as well as all types of wire rope, includes fencing, splicing, fittings installation, fish nets and plastic ropes.

Bridon-American, 49%-owned, completed its new wire drawing mill and corporate headquarters in Exeter, Pennsylvania. In a drive to improve its market share, Bridon completely restructured its marketing and general management organization. Henceforward, Bridon-American will be part of an integrated management unit with the Canadian Company which will permit significant production and marketing economies. Detailed analysis and consultation indicate that some closure of manufacturing facilities is required.

Noranda Aluminum Group

In the first full year of expanded operations, Noranda Aluminum's two potlines produced slightly over 145,000 tons of primary aluminum. Of this quantity, 7,560 tons were converted by the Company into electrical transmission wire, 16,310 tons were custom rolled for conversion into siding by Norandex and 5,220 tons were extruded by Norandex.

Increased applications for aluminum in the transportation industry in addition to a strong housing market resulted in stable prices and full demand for primary aluminum. Thus NorAl enjoyed its best year.

The soft spot in the Aluminum industry continued to be bauxite and alumina which are in oversupply. This condition, combined with some production difficulties at the Friguia plant in Guinea, resulted in that joint venture remaining unprofitable.

Norandex, the Company's aluminum building product fabricator and distributor began to realize the fruits of its 1976 reorganization. Sales increased by 33% over 1976 due primarily to products aimed at the U.S. residential new construction and remodelling markets. Principally, these are aluminum windows, siding, storm doors and windows. The Company is also focussing on energy saving building products which has resulted in an expanded capability to introduce new products with improved insulating properties in 1978.

Having been combined with NorAl as a management unit, metal supply and trading as well as extrusion activities will become part of the primary aluminum responsibility.

Forest Products

Timberland.

Summary

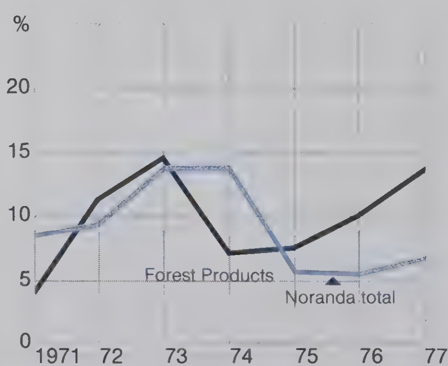
Profits in this division were at the highest levels since Noranda's entry into the field. The Company's investment in its various interests aggregated $179 million at December 31, 1977.

Four things stand out in the 1977 year for Noranda's forest product interests. The first was the virtual absence of labour strife or work stoppage at any location with a resultant operational steadiness and reliability. The second was the sale of Northwood Panelboard to a joint venture with Mead Corporation for the conversion of the plant to waferboard production. Third, the major rebuild of Fraser's Edmundston facilities proceeded according to plan and, finally, B.C. Forest Products acquired the Blandin Paper Company in a significant move to integrate its pulp production.

PRODUCTION

	Lumber MM Fbm	Market Pulp (000 Tons)	Paper Products (000 Tons)
Total	1,613.7	709.0	673.6
Noranda's Interest	725.6	268.2	302.3

Earnings (before common costs) as a % of Net Capital Employed



Markets

Strength in the U.S. housing industry resulted in stable and well priced markets for lumber throughout the year. Plywood and panel products remained in oversupply although they achieved better returns than in 1976.

Markets for pulp went down hill steadily all year. By December, prices had declined about 25% and producers were faced with the reality of an apparently long-term over-supply situation.

In the paper markets, Noranda's exposure proved to be ideal. Western newsprint was strong throughout the year as were the groundwood papers used for magazines, catalogues and directories. The weakest segment was bond papers, but Fraser maintained acceptable production levels.

The outlook for 1978 is for a continuation of year-end conditions — strong lumber, newsprint and groundwood paper markets offset by very depressed levels of pulp prices. If the decline in pulp inventories which was noticeable in late 1977 continues, some price recovery should be possible later in 1978. Overshadowing all of this is the Canadian-U.S. exchange rate. Had the Canadian dollar remained at the same levels as in 1976, the reported profits of Noranda's Forest product interests would have been about 40% lower.

Fraser Paper, Limited, Madawaska, Maine, U.S.A.

Northwood Mills

The sawmills performed steadily throughout the year and achieved both profitability and improved productivity. The sawmill at Penticton was destroyed by a fire in August and no decision has yet been taken as to its replacement.

The sales division had an excellent year even though the U.K. market was less than buoyant and penetration of the Japanese market continued to be difficult. Building Materials operations concentrated on maintaining margins in the face of somewhat lower sales. This proved to be a profitable strategy and the Company's six branches were generally in strong condition by year-end, excepting Montreal which is suffering from the general malaise of the Quebec economy.

Fraser Companies (54.9%)

Perhaps the most notable event was the Company's 100th birthday, an occasion in which all concerned took great pride. The milestone was passed with the Company in a strong and strengthening position. Profits at $13.9 million or $5.90 per share were the second highest on record and sales exceeded $200,000,000 for the first time. In volume terms the Company shipped record quantities of paper and lumber.

The Edmundston pulp mill modernization program has continued on time and budget. This is an extraordinarily complex undertaking which does credit to all those connected with it. Parts of the rebuild are already making a profit contribution and further benefits will be felt during 1978.

Other significant capital projects were the tree nursery, which will now produce 7,000,000 seedlings a year, further modernization of the Kedgwick Sawmill and a new planer mill at Plaster Rock.

Fraser is in a unique position to add to its capacity at Madawaska to produce lightweight coated groundwood papers, the most promising product in the industry. A new project is being considered which could add 70,000 tons to the Company's capacity by 1980.

Northwood Pulp and Timber (50%)

Consolidated earnings were a record in 1977 with the major contributions coming from the strong lumber market and the large decline in the value of the Canadian dollar.

The capital improvements made at the sawmills in recent years enabled them to take full advantage of an excellent lumber market, particularly in the U.S. Records were set for production, sales and earnings. The one depressing factor in these results was the surplus of chips produced for which there is no market.

Owing to weak pulp markets and low prices, the pulpmill production rate was curtailed to 80% of capacity to avoid excessive inventories.

Despite the poor pulp market, B.C. Chemicals achieved good results, maintaining chlorate sales volumes and doubling tall oil sales.

Northwood Pulp made no major capital commitments in its British Columbia operations during 1977, but in December purchased from Northwood Mills the outstanding shares of Northwood Panelboard Ltd. of Chatham, New Brunswick. Studies of the market potential for the plant's product were completed in 1977 and operations will commence in 1978 after the plant is converted to the production of waferboard.

British Columbia Forest Products (28.4%)

Earnings of $35.1 million or $4.58 per share were the highest in the Company's history due to a particularly favourable combination of accepted products in strong markets. The exchange value of the Canadian dollar also produced a material gain in reported profits.

The pulp, newsprint, plywood and lumber divisions all operated at a steady rate, although at much less than capacity in the case of pulp.

The major corporate activity and a milestone in the history of the Company was the acquisition of the Blandin Paper Co. of Grand Rapids, Minnesota. This Company produces coated groundwood publication paper and waferboard, the two products in greatest demand of all forest products. The acquisition cost of approximately $120,000,000 has been well justified by the positive contribution to earnings as well as the ability to integrate pulp production from B.C. into paper in the U.S.

The project of Donohue-St. Felicien in Quebec in which BCFP has a 40% interest and $28,000,000 continues on schedule, within budget. Startup is probable towards the end of 1978.

Northwood Mills

	Production	Sales		
	Nwd. Mills	Nwd. Mills	Nwd. Building	
	Lumber Mfbm	Lumber Mfbm	Lumber Mfbm	Panelboard MSM 1/16″
1977	180,000	775,000	245,000	856,000
1976	178,500	711,000	284,000	1,039,000
1975	110,000	367,000	410,000	1,197,000
1974	110,000	660,000	396,000	1,044,000
1973	194,500	701,000	368,000	888,000

Fraser Companies

	Production			
	Lumber Mfbm	Pulp Tons	Paper Tons	Boxboard Tons
1977	67,700	83,000	385,100	31,500
1976	64,700	74,100	375,800	32,600
1975	42,900	53,700	301,000	30,300
1974	51,600	97,800	372,400	32,600

Northwood Pulp & Timber

	Production		
	Lumber Mfbm	Pulp Tons	Chips B.D.U.
1977	554,000	205,000	332,000
1976	512,000	231,000	334,000
1975	235,000	169,000	156,000
1974	447,000	208,000	282,000
1973	504,500	234,000	283,000

British Columbia Forest Products

	Production			
	Lumber Mfbm	Pulp Tons	Newsprint Tons	Plywood MSM 1/16″
1977	812,000	421,000	257,000	1,203,000
1976	721,000	480,000	252,000	1,141,000
1975	434,000	356,000	193,000	802,000
1974	474,000	466,000	246,000	986,000
1973	536,000	452,000	256,000	1,162,000

Effects of Inflation

The erosion of corporate financial strength due to inflation is very real, but numerous studies by accounting and other organizations around the world have yet to produce an acceptable method of measuring the impact. A committee appointed last year by the Ontario government to study the problem recommended an approach that, using a Statistics Canada index, attempts to measure the effects of inflation on the funds generated by a business. By deducting the funds required to maintain the business, given the increased replacement cost of inventories and fixed assets, the statement indicates the amount hypothetically available from the year's operations for distribution to shareholders or for expansion.

Application of this method to Noranda's 1977 results produces the following statement:

Funds generated from operations totalled (from statement of changes in financial position)		$142,000,000
From this should be deducted the funds required to finance original cost of productive assets (historical cost depreciation)		83,000,000
		59,000,000
To take account of the increased cost of maintaining operating capacity in our inflationary environment requires the following allocation of funds:		
To replace inventories	25,000,000	
For plant, machinery and equipment	49,000,000	
	74,000,000	
Less additional funds which may be available from borrowings if present debt-equity ratio is maintained	37,000,000	37,000,000
Funds hypothetically available from the year's operations for distribution or expansion		$ 22,000,000

In effect, this statement attempts to respond to the basic question as to whether sufficient funds were generated to maintain the viability of the business. It suggests that the bulk of the funds generated during 1977 were needed simply to maintain the existing business, and that the remainder fell short of covering the dividends paid to Noranda shareholders. No funds were generated to finance the new projects which would allow Noranda to make a meaningful contribution to Canada's economic recovery.

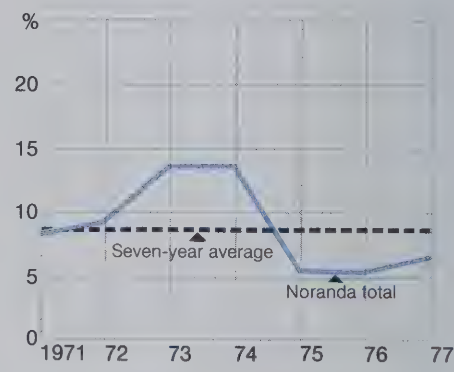
In fact, Noranda spent $141 million on fixed asset additions and deferred development in 1977, slightly more than the $132 million ($83 million plus $49 million) shown in this statement. However, since some $67 million of this was spent on major projects, some needed expenditures for maintenance of existing businesses were obviously deferred. In addition, evidence indicates that operating capital requirements grew in line with the inflation rate.

In short, this statement suggests that Noranda earned enough in 1977 to survive, but not to grow.

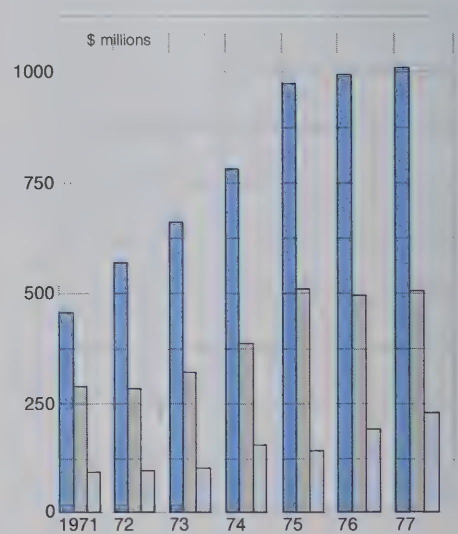
It must be emphasized, however, that this statement is intended to provide perspective and is necessarily imprecise. There is also concern that it may understate the full impact of inflation since the Statistics Canada index used does not fully reflect the escalation that has taken place in the replacement cost of fixed assets.

Data presented in these graphs have been prepared using historical costs as a base. The effects of inflation have not been taken into account.

Earnings (before common costs) as a % of Net Capital Employed *



Net capital employed * by division



Mining, smelting, refining
Manufacturing
Forest Products

* Net capital employed defined as operating working capital, fixed assets at cost less accumulated depreciation, investments and other assets at book value.

Accounting Policies

Basis of presentation of financial statements

The accompanying financial statements include, on a consolidated basis, the accounts of Noranda Mines Limited (the Company) and all of its subsidiaries. The Company together with its subsidiaries is referred to as Noranda. Noranda's interests in associated companies in which it has significant influence but not majority share ownership are accounted for on the basis of cost plus Noranda's equity in undistributed earnings of such companies since the dates of investment. The difference between the cost of the shares of associated companies over the underlying net book value of the assets is amortized over the life of the assets to which the difference is attributed. Other long-term investments are carried at cost less any amounts written off.

Certain subsidiary and associated companies own shares in the Company. The Company's proportionate interest in the carrying value of such shares has been deducted from shareholders' equity. Similarly, the Company's earnings per share have been calculated on the number of shares outstanding after reduction for such intercompany holdings.

Translation of foreign currencies

Foreign currency assets and liabilities of the Company and its subsidiaries and associated companies are translated into Canadian dollars as follows: working capital at exchange rates prevailing at the end of the period; fixed and other long-term assets, long-term debt and depreciation provisions on the basis of historic rates of exchange; revenues and expenses (other than depreciation) at average rates during the period. Exchange translation gains and losses from these procedures are included in consolidated earnings.

Inventories

Mine products are valued at estimated realizable value and other inventories at the lower of cost and market. In the U.S. subsidiary companies and certain foreign affiliates, the cost of major inventories is determined on a LIFO basis.

Futures contracts

From time to time, the Company owns futures contracts for the purchase or sale of metals and currencies. These contracts are not reflected in the Company's accounts, beyond the amount of deposit required, until maturity date although provision is made for any estimated unrealized losses.

Depreciation and development charges

Depreciation of property, buildings and equipment and amortization of development expenditures are based on the estimated service lives of the assets calculated using the method appropriate in the circumstances, for the most part straight-line for fixed assets and unit of production for development.

Exploration

Mineral and petroleum exploration expenditures are charged against current earnings unless they relate to properties from which a productive result is reasonably certain or on which work is in process. Gains on sale or recoveries of costs previously written off are normally credited against exploration expense.

Income taxes

Under the income tax laws, some costs and revenues are included in taxable income in years which are earlier or later than those in which they are included in income reported in the financial statements. As a result of these timing differences, income taxes currently payable normally differ from the provision for taxes charged to earnings. The differences are shown in the consolidated balance sheet as taxes provided not currently payable.

Potential tax savings arising from losses incurred and investment tax credits are not reflected in earnings in the year they arise unless they are virtually certain to be realized.

Interest

Generally interest expense is accrued and charged against income except interest that can be identified with a major capital expenditure program. Such interest is capitalized during the construction period.

Start-up costs

Start-up costs on major projects are deferred until the facility achieves commercial production volumes. These deferred costs are written off over a reasonable period on either a straight-line or unit of production basis.

Research

Research expense is charged against income as incurred.

Aluminum plant

Certain of the assets and the related debt of the aluminum plant in the City of New Madrid, Missouri, while technically the property and obligation of the City, are carried on Noranda's books by virtue of its long-term lease option and unconditional guarantees.

Noranda Mines Limited
(Incorporated under the laws of Ontario)
and its consolidated subsidiaries

Consolidated Balance Sheet

December 31

Assets	1977	1976
	(in thousands)	
Current assets		
Cash and short-term commercial notes	$ 21,335	$ 74,129
Marketable investments, at cost less amounts written off (quoted market value $15,674,000; 1976 — $22,703,000)	14,942	15,784
Accounts, advances and tolls receivable	320,067	288,225
Inventories	395,603	378,576
	751,947	756,714
Investments in and advances to associated and other companies (note 2)	387,179	361,881
Fixed assets		
Property, buildings and equipment, at cost	1,551,239	1,465,297
Accumulated depreciation	(668,674)	(609,764)
	882,565	855,533
Other assets (note 3)	131,190	118,541
	$2,152,881	$2,092,669

(See accompanying notes)

Auditors' Report

To the Shareholders of
Noranda Mines Limited:

We have examined the consolidated balance sheet of Noranda Mines Limited as at December 31, 1977 and the consolidated statements of earnings, retained earnings and changes in financial position for the year then ended. Our examination of the financial statements of Noranda Mines Limited and those subsidiaries and associated companies of which we are the auditors was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances. We have relied on the reports of the auditors who examined the financial statements of the other subsidiaries and associated companies.

In our opinion, these consolidated financial statements present fairly the financial position of the company as at December 31, 1977 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles which, except for the change described in note 1(b), with which we concur, have been applied on a basis consistent with that of the preceding year.

Clarkson, Gordon & Co.,
Chartered Accountants

Toronto, Canada,
February 13, 1978.

Liabilities	1977	1976
	(in thousands)	
Current liabilities		
Bank advances (note 4(c))	$ 206,132	$ 164,222
Accounts payable	257,929	255,657
Taxes payable	25,235	35,700
Debt due within one year (note 4)	99,321	103,685
	588,617	559,264
Deferred liabilities and holdbacks payable	10,321	8,610
Taxes provided not currently payable	82,758	85,829
Long-term debt (note 4)	588,881	603,360
Minority interest in subsidiaries	128,155	120,351
Shareholders' equity		
Capital stock (note 6) —		
Authorized:		
40,000,000 shares of no par value		
Issued:		
24,464,511 shares (note 6(a))	85,354	85,338
Retained earnings	680,773	641,895
	766,127	727,233
Less the company's pro rata interest in its shares held by subsidiary and associated companies	(11,978)	(11,978)
	754,149	715,255
	$2,152,881	$2,092,669

On behalf of the Board:

ALFRED POWIS, Director

WILLIAM S. ROW, Director

Consolidated Statements of Earnings and Retained Earnings

For the years ended December 31

Earnings	1977	1976
	(in thousands)	
Revenue		
Metals, products and custom tolls (note 8)	$1,386,516	$1,232,394
Other (net)	9,271	2,360
	1,395,787	1,234,754
Expense		
Cost of metal production and products sold	1,040,874	943,850
Administration, selling and general expenses	94,353	87,097
Depreciation ($75,103,000; 1976 — $64,409,000) and development charges	83,136	70,230
Exploration and research written off	35,963	16,970
Interest — net (including long-term debt interest of $44,444,000; 1976 — $39,604,000)	71,856	61,652
	1,326,182	1,179,799
	69,605	54,955
Income and production taxes (note 7)	22,666	25,068
Minority interest in profits of subsidiaries	12,625	10,050
	35,291	35,118
Earnings of Noranda and subsidiary companies	34,314	19,837
Share of after-tax profits in associated companies (note 2)	32,862	26,898
Earnings	$ 67,176	$ 46,735
Earnings per share	$ 2.85	$ 1.98

Retained Earnings		
Balance, beginning of year (including $5,043,000 previously classified as contributed surplus)	$ 641,895	$ 623,457
Earnings	67,176	46,735
	709,071	670,192
Dividends paid (note 6(a))	28,298	28,297
Balance, end of year	$ 680,773	$ 641,895

(See accompanying notes)

Consolidated Statement of Changes in Financial Position

For the years ended December 31

	1977	1976
	(in thousands)	
Working capital, beginning of year	$197,450	$188,002
Source of funds		
Operations —		
Earnings	67,176	46,735
Depreciation and development charges	83,136	70,230
Taxes provided not currently payable	(3,071)	(31,584)
Minority interest in profits of subsidiaries	12,625	10,050
Share of earnings less dividends of associated companies	(17,932)	(11,535)
	141,934	83,896
Sale of Northwood Panelboard Ltd. (note 2(d))	6,396	—
Issue of shares	16	348
Investments and advances	8,191	22,361
Long-term financing	1,517	108,100
Fixed asset disposals and adjustments	7,760	8,901
Increase (decrease) in deferred liabilities and holdbacks payable	1,711	(404)
	167,525	223,202
Application of funds		
Fixed assets (note 9)	119,565	115,628
Deferred development, exploration and other expenditures (note 9)	21,748	27,401
Investments and advances	15,557	481
Dividends paid to — shareholders	28,298	28,297
— minority shareholders of subsidiaries	4,821	4,150
Current maturities of long-term debt	11,656	37,797
	201,645	213,754
Net increase (decrease) in working capital	(34,120)	9,448
Working capital, end of year	$163,330	$197,450

(See accompanying notes)

Notes to Consolidated Financial Statements

December 31, 1977

1. Accounting policies

(a) The principal accounting policies followed by Noranda Mines Limited and its subsidiary companies are summarized under the caption "Accounting Policies".

(b) As of January 1, 1977, the U.S. subsidiary companies and certain foreign affiliates adopted the LIFO basis for determining the cost of major inventories. The effect of this change was to reduce the carrying value of inventories as of January 1, 1977 and December 31, 1977 and decrease the operating income before income taxes for the year by approximately $4,600,000.

2. Investments

(a) Investments in and advances to associated and other companies consist of:

	Direct interest	Carrying value 1977	1976
		(in thousands)	
Investments — carried on an equity basis —			
British Columbia Forest Products Limited	29%	$ 52,209	$ 44,686
Craigmont Mines Limited	20	3,599	3,963
Kerr Addison Mines Limited	41	26,454	25,869
Mattagami Lake Mines Limited (N.P.L.)	34	37,438	37,530
Northwood Pulp and Timber Limited	50	39,006	31,583
Orchan Mines Limited	45	11,703	10,985
Pamour Porcupine Mines Limited	49	1,591	1,548
Placer Development Limited	31	68,201	64,697
Tara Exploration and Development Company Limited (note 2(c))	24	35,427	30,647
Frialco/Friguia Guinean Consortium	20	20,945	22,303
Other companies		50,866	45,039
		347,439	318,850
Other investments and advances —			
Shares, at cost less amounts written off		10,789	10,839
Advances and other indebtedness (note 2(c))		28,951	32,192
		$ 387,179	$ 361,881

(b) Included above are shares carried at a book value of $247,021,000 which had a quoted market value of $280,647,000 at December 31, 1977. The latter amount does not necessarily represent the value of these holdings, which may be more or less than that indicated by market quotations.

(c) $20,340,000 of advances and other indebtedness at December 31, 1977 was secured by shares of Tara Exploration and Development Company Limited. Subsequent to the year end $18,324,000 of this amount was settled through the purchase of an additional 17% of Tara's outstanding shares, raising the company's interest to 41% at a carrying value of $53,750,000.

(d) As of December 31, 1977, Northwood Mills Limited, a wholly-owned subsidiary, disposed of all of the outstanding shares of Northwood Panelboard Ltd. to Northwood Pulp and Timber Limited (a 50% owned company) for a cash consideration of $1 and additional future consideration related to cash flow.

The effect of this transaction, and the payment of $1,000,000 by Northwood Panelboard on its indebtedness to Northwood Mills, on Noranda's balance sheet is summarized below:

	(in thousands)
Reduction of non-current assets —	
Fixed	$9,670
Other	1,066
	10,736
Reduction of long-term debt	4,340
Non-current assets (net)	6,396
Working capital increase	1,957
	$4,439
Increase in investment and advances to associated companies	$4,439

3. Other assets

	1977	1976
	(in thousands)	
Deferred development and start-up costs	$ 96,740	$ 79,686
Deferred exploration expenditures	19,074	19,695
Other deferred assets	8,149	10,924
Debenture and revenue bond discount and financing expenses, at cost less amortization	7,227	8,236
	$ 131,190	$ 118,541

4. Debt

(a) Long-term debt:

	1977	1976
	(in thousands)	
Noranda Mines Limited —		
10¼% notes due March 1, 1977	—	$ 25,000
9¾% notes due July 15, 1982	$ 25,000	25,000
9¾% notes due November 1, 1980 (of which $15,000,000 is payable in U.S. currency)	25,398	25,398
7½% sinking fund debentures maturing October 1, 1988	24,124	25,975
9¼% sinking fund debentures maturing October 15, 1990	36,682	37,942
9¾% sinking fund debentures maturing May 1, 1994	50,000	50,000
Noranda Aluminum Inc. —		
10½% secured notes repayable at various dates up to October 1, 1995 ($80,000,000 U.S.)	81,360	81,360
5.25% to 5.90% industrial revenue bonds, serial and sinking fund issues, maturing November 1, 1978 and 1993 (December 31, 1977 — $70,850,000 U.S.; December 31, 1976 — $73,510,000 U.S.)	76,047	78,670
8% pollution control revenue bonds due April 1, 2001 ($10,500,000 U.S.)	10,315	10,315
Norandex Inc. —		
5½% — 10% mortgage notes payable in monthly instalments to 2002 (December 31, 1977 — $7,369,000 U.S.; December 31, 1976 — $7,394,000 U.S.)	7,875	7,863
Brunswick Mining and Smelting Corporation Limited —		
5.85% first mortgage sinking fund bonds, series "A" maturing April 1, 1986	9,937	10,595
7.25% general mortgage sinking fund bonds, series "A" maturing August 15, 1987	10,746	11,667
11% general mortgage sinking fund bonds, series "B" maturing December 1, 1996	35,000	35,000
Fraser Companies, Limited —		
6⅛% sinking fund debentures, series "A" maturing April 1, 1987 (December 31, 1977 — $7,500,000 U.S.; December 31, 1976 — $8,250,000 U.S.)	8,109	8,857
10¾% sinking fund debentures series "B" maturing June 1, 1992 ($35,000,000 U.S.)	35,612	35,612
Northwood Panelboard Ltd. —		
9% mortgage sinking fund bonds maturing May 15, 1991 (note 2(d))	—	4,680
Sundry indebtedness	10,102	11,477
	446,307	485,411
Notes payable (note 4(b))	241,895	221,634
	688,202	707,045
Debt due within one year (including notes payable of $91,895,000 — December 31, 1977; $71,634,000 — December 31, 1976)	99,321	103,685
Long-term debt	$588,881	$603,360

Maturities of long-term debt are as follows:

1979 —	$ 15,615,000
1980 —	43,261,000
1981 —	170,552,000
1982 —	45,916,000
Subsequent —	313,537,000

(b) $150,000,000 of notes payable, representing promissory notes with maturities from January to March, 1978, have been classified as long-term debt to the extent of the unconditional commitment the company has received from its bankers for contractual term credits expiring December 31, 1981.

(c) Accounts receivable and inventory of a subsidiary have been pledged as collateral for demand loans of $19,500,000 to that company.

5. Commitments and contingent liabilities

(a) Approved capital projects and financing commitments outstanding total approximately $79,000,000 at December 31, 1977.

(b) The company and its subsidiaries have guaranteed or are contingently liable for repayment of loans of associated and other companies to the extent of approximately $33,000,000 at December 31, 1977.

(c) As at December 31, 1977 Noranda's total unfunded obligations under its pension plans is estimated at $28,300,000. These obligations are funded as required by applicable governing legislation. In Canada, the unfunded obligations will be funded and absorbed against income through annual instalments not exceeding $2,000,000 over periods up to fourteen years. $8,900,000 of the unfunded obligations relating to U.S. subsidiaries, will be amortized over periods up to forty years in annual instalments not exceeding $500,000.

(d) The company and certain of its subsidiaries from time to time enter into long-term lease arrangements for buildings, such arrangements currently giving rise to annual charges totalling approximately $3,000,000.

(e) The company is one of twenty-nine defendants, described as uranium producers and located in various countries, to a private antitrust action instituted by Westinghouse Electric Corporation in the United States District Court alleging the existence of a conspiracy among such producers to restrain interstate and foreign commerce in uranium. A second action alleging the existence of the same conspiracy has been brought against the company and seven other defendants by the Tennessee Valley Authority. It is expected that the damages ultimately claimed by the plaintiffs will be substantial.

The company and three associated companies are among fifteen defendants in an action instituted in the Superior Court of the Province of Quebec by various groups of and individual Cree Indians for damages of $8,034,000 and injunctive relief in respect of alleged environmental contamination and other interference with alleged territorial rights of the Cree Indians in Northern Quebec.

The company is defending these actions and believes it has good defences on the merits.

(f) During the year a series of disputes between Noranda Aluminum Inc. and Associated Electric Cooperative, Inc., resulted in a number of lawsuits being filed by Noranda Aluminum against Associated over the cost of power supplied and related matters. Noranda Aluminum has paid to Associated under protest and with reservation of rights $1,300,000 U.S. relating to claims by Associated for the period April 1 to June 30, 1977 and $2,600,000 U.S. relating to the period July 1 to December 31, 1977. The amount of $1,300,000 U.S. is included in current assets and the $2,600,000 U.S. has been charged to operations. Associated has also made a claim for approximately $3,400,000 U.S. for the nine months ended March 31, 1977 for which no provision has been made in the accounts.

6. Shareholders' equity

(a) The Issued capital stock is summarized below:

	December 31, 1977	December 31, 1976
	Shares	
Class A shares	22,332,853	22,194,059
Class B shares	2,131,658	2,269,827
Total	24,464,511	24,463,886
Less the company's proportionate interest in its shares held by subsidiary and associated companies	882,367	882,367
	23,582,144	23,581,519
During the year the following dividends were declared:		
Class A — $1.20/share	$26,649,000	$26,630,000
Class B — $1.155/share (1976 — $1.02/share) plus 15% tax on undistributed income on dividends paid prior to March 31, 1977.	2,708,000	2,723,000
Total	29,357,000	29,353,000
Less the company's proportionate share of dividends paid to subsidiary and associated companies	1,059,000	1,056,000
Net charge to retained earnings	$28,298,000	$28,297,000

Classes A and B shares are voting, convertible into one another on a share-for-share basis and rank equally with respect to dividends and in all other respects. The only distinction between the two classes is that the directors may specify that cash dividends on Class B shares be paid out of tax-paid undistributed surplus on hand or out of 1971 capital surplus on hand (as those expressions are defined in the Income Tax Act of Canada). After December 31, 1978 Class B dividends may no longer be paid from those categories of surplus.

(b) During the year, 625 shares in the company's capital stock were issued under the company's stock option plan for $16,840 and 4,345 options were cancelled.

At December 31, 1977, 51,975 options on shares were outstanding, exercisable at prices varying from $26.17 to $28.50 for periods up to 1982.

(c) Under the company's share purchase plan shares are sold to a trustee for resale to employees financed by an interest-free loan from the company. At December 31, 1977, the amount of the loan included in accounts receivable was $4,099,000.

7. Income taxes

At December 31, 1977 certain subsidiaries of the company had estimated loss carry forwards of approximately $9,600,000. The reduction in the loss carry forward from the $40,000,000 shown in 1976 is principally the result of the sale of Northwood Panelboard Ltd. referred to in note 2(d). Investment tax credits of $9,060,000 are also available.

8. Consolidated divisional revenues

Revenues from the main divisions of the business are set out on page 31 in the table of "Consolidated Divisional Results."

9. Oil and gas participation agreements

Under various agreements, other companies have agreed to participate in Noranda's exploration and development program and are obligated to contribute $48,000,000 in order to earn varying interests in the lands covered by the agreements. The participants' share of expenditures under the program as at December 31, 1977 amounted to $36,626,000. Expenditures on fixed assets, and deferred development, exploration and other expenditures shown on the consolidated statement of changes in financial position have been reduced by $17,645,000 and $18,981,000 respectively as a result of the participation referred to above. Expenditures incurred subsequent to fulfillment of the companies' respective contributions will be shared with Noranda in proportion to the respective interests in the lands.

10. Remuneration of directors and senior officers

The aggregate direct remuneration paid or payable by the company and its consolidated subsidiaries to directors and senior officers amounted to $1,306,000.

11. Central Canada Potash

The Potash Corporation of Saskatchewan, a Crown-owned corporation, advised the company in June 1977 that it would not enter into negotiations for the purchase of Central Canada Potash.

12. Anti-Inflation Program

The company and its subsidiaries and associated companies in Canada are subject to, and believe they have complied with, controls on prices, profits, employee compensation and shareholder dividends under the Federal Government's Anti-Inflation Program.

13. Comparative figures

Certain comparative figures in the balance sheet have been restated to conform with the method of presentation adopted in 1977.

Consolidated Divisional Results

For the years ended December 31

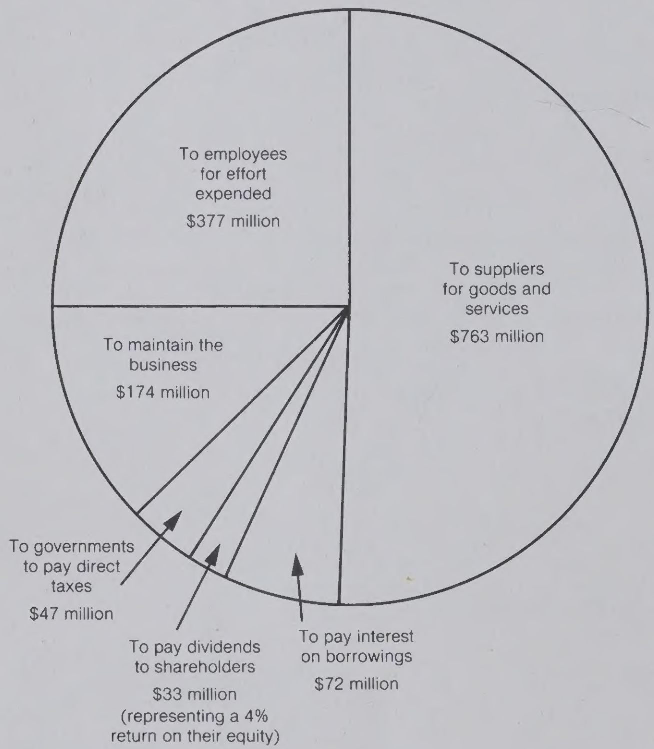
	1977	1976
Revenue from metals, products and custom tolls	(in thousands)	
Copper mining, smelting and refining operations *	$ 309,598	$ 321,413
Other mining and metallurgical operations **	419,794	340,197
Total mining and metallurgical operations	$ 729,392	$ 661,610
Manufacturing operations **	704,528	575,268
Forest products operations **	552,364	489,814
Gross Revenue	$1,986,284	$1,726,692
LESS: sales between divisions	127,000	99,000
sales by associated companies **	472,768	395,298
Revenue as Reported	$1,386,516	$1,232,394
Earnings		
Copper mining, smelting and refining operations	$ 37,047	$ 45,824
Other mining and metallurgical operations	31,083	24,503
Earnings from mining investments	3,906	1,601
Gross mining and metallurgical earnings	$ 72,036	$ 71,928
LESS: exploration written off	16,631	10,307
Net mining and metallurgical earnings	$ 55,405	$ 61,621
Manufacturing operations and investments	30,531	10,611
Forest products operations	31,077	19,224
Earnings before common costs	117,013	91,456
LESS: common costs	49,837	44,721
Net Earnings	$ 67,176	$ 46,735
Breakdown of Common Costs		
Corporate office costs	$ 11,642	$ 10,773
Interest expense net of revenue	67,372	59,235
Unallocated research costs	4,220	1,471
Less applicable tax reductions	(33,397)	(26,758)
TOTAL	$ 49,837	$ 44,721

* Consists of operations of the Horne smelter, Geco and Bell Copper mines, Mines Gaspé and Canadian Copper Refiners.

** Gross revenues and earnings include Noranda's share of the revenues and earnings of associated companies accounted for on an equity basis. These gross revenues include $145,578,000 from mining and metallurgical operations, $214,970,000 from forest operations, and $112,220,000 from manufacturing operations in 1977. ($123,875,000, $175,440,000 and $95,983,000 respectively in 1976).

1977 Financial Results — Economic Perspective

As with all business enterprise, Noranda is engaged in meeting some of society's needs through the use of savings invested in the company by its shareholders. In doing so it must provide a competitive return on these savings sufficient to expand the capital base of both the company and the country in the long run. This pursuit produced revenues in 1977 of $1,387 million. Total spending in the year for all business purposes, including maintaining the capital base, exceeded this income stream by $80 million, and was distributed as shown on the following chart:



The excess of spending over revenues was met from $53 million of cash that was on hand at the beginning of the year from earlier financing activity, and by new borrowings for the balance, chiefly in partially owned subsidiary companies.

By applying to these numbers some broad economic measures that point to the intermediary role of a business enterprise like Noranda in the economy of the country, a different perspective emerges than is apparent from traditional financial measures:

- The average per capita income in Canada last year was about $7,300, so one could estimate that Noranda's spending in 1977 supported some 200,000 people — employees of Noranda and their families, Noranda's suppliers, creditors and shareholders and those supported out of tax revenues generated by the Noranda spending stream.
- Government spending supported by all tax revenues now amounts to about 40% of the Gross National Product. Applying this ratio would suggest that the real contribution to all levels of government arising from Noranda's spending stream is probably closer to $550 million rather than the $47 million directly paid. This arises from the whole web of tax collection that springs from the distribution of Noranda's revenue to employees, suppliers, creditors and shareholders, the direct taxes they pay, and the indirect taxes through their subsequent spending, added to the direct and indirect taxes paid by Noranda. As well, there is the hidden burden of government regulation, which is estimated to have added in excess of $30 million to Noranda's production costs and to the costs of maintaining plant capacity in 1977.

The cost burden placed on Canada's economy by governments is one-third higher in real terms than it was ten years ago. This level of government spending appears to be beyond the ability of our economy to sustain because of the difficulty being widely experienced in delivering Canadian products to world markets at competitive prices without consuming our captial. A dramatic cut-back in the government's share of the Gross National Product would seem essential if our economy is to prosper in the longer term.

Operating Interests

Domestic

Mining and Petroleum

Geco Division, Manitouwadge, Ont.	copper-zinc-silver
Mines Gaspé, Murdochville, Que.	copper
Bell Copper Division, Granisle, B.C.	copper-gold
Boss Mountain Division, Hendrix Lake, B.C.	molybdenum
Alberta Sulphate, Horseshoe Lake, Alta.	sodium sulphate
Brenda Mines, Peachland, B.C.	copper-molybdenum
Brunswick Mining & Smelting, Bathurst, N.B.	zinc-lead-copper-silver
Canadian Hunter Exploration, Calgary, Alta.	petroleum
Central Canada Potash, Colonsay, Sask.	potash
Kerr Addison Mines, Virginiatown, Ont.	gold
Agnew Lake Mines, Espanola, Ont	uranium
Langmuir Property, Pamour, Ont	nickel
Mattagami Lake Mines, Matagami, Que.	zinc-copper-silver
Mattabi Mines, Ignace, Ont.	zinc-copper-silver
Orchan Mines, Matagami, Que.	copper-zinc
Pamour Porcupine Mines, Pamour, Ont.	gold
Schumacher Division, Schumacher, Ont	copper-gold
Placer Development	
Craigmont Mines, Merritt, B.C.	copper
Endako Mine, Fraser Lake, B.C.	molybdenum
Gibraltar Mines, McLeese Lake, B.C.	copper
Placer CEGO Petroleum, Calgary, Alta.	petroleum

Smelting & Refining

Horne Division, Noranda, Que.	copper smelter
Mines Gaspé, Murdochville, Que.	copper smelter
Canadian Copper Refiners, Montreal East, Que.	copper refiner
Brunswick Mining & Smelting, Belledune, N.B.	lead smelter
Canadian Electrolytic Zinc, Valleyfield, Que.	zinc reduction
Federated Genco, Scarborough, Ont.	metal-alloys
Plants: Burlington and Scarborough, Ont., Lachine, Que.	

Fertilizer Plants

Belledune Fertilizer, Belledune, N.B.	diammonium phosphate
St. Lawrence Fertilizers, Valleyfield, Que.	diammonium phosphate and triple superphosphate

Forest Products

British Columbia Forest Products, Vancouver, B.C.	lumber, pulp, newsprint, plywood and shingles
Mills: Boston Bar, Cowichan, Crofton, Delta, Hammond, Mackenzie, Tilbury and Victoria, B.C.	
Fraser Companies, Edmundston, N.B.	boxboard, lumber and pulp
Mills: Atholville, Edmundston, Kedgwick and Plaster Rock, N.B.	
Northwood Mills, Penticton, B.C.	lumber
Mills; Okanagan Falls and Princeton, B.C.	
Northwood Pulp and Timber, Prince George, B.C.	lumber and pulp
Mills; Houston, Prince George, Shelley and Upper Fraser	
B.C. Chemicals, Prince George, B.C.	chlorate and tall oil
Northwood Panelboard, Chatham, N.B.	waferboard

Manufacturing

Canada Wire and Cable, Toronto, Ont.	copper rod, wire & cable
Plants: Toronto, Fergus, Orangeville, and Simcoe, Ont., Saint John, N.B., Montreal East, Que., Winnipeg, Man., Weyburn, Sask., New Westminster, B.C.	
Industrial Wire & Cable Division, Toronto, Ont.	
Plants: Quebec, Que., Toronto, Ont.	
Canplas Industries, Barrie, Ont.	plastic moulding
Plants: Barrie, Ont., and New Westminster, B.C.	
Grandview Industries, (Rexdale) Toronto, Ont.	plastic moulding and extrusion
Plants: Rexdale, Brampton and Mississauga, Ont., Montreal, Que., Weyburn, Sask., Langley, B.C.	
Noranda Metal Industries, Montreal East, Que.	copper sheet, strip, tube and alloys
Plants: Montreal East, Que., Fergus and Arnprior, Ont., New Westminster, B.C.	
Quebec Iron Foundries, Mississauga, Ont.	mill liners, grinding media and secondary metal
Plants: Mont Joli (2) and Moncton, N.B.	
Wire Rope Industries, Montreal, Que.	steel wire rope
Plants: Pointe Claire, Que., and Vancouver, B.C.	
Gourock Industries, Boucherville, Que.	synthetic rope

International

Bridon-American, Exeter, Pa. U.S.A.	steel wire rope
Plants: Exeter and Muncy, Pa.	
British Columbia Forest Products	
Blandin Paper Co., Grand Rapids, Minn., U.S.A.	paper and waferboard
Canada Wire and Cable (International)	wire and cable
Alambres Dominicanos, Dominican Republic	
Cabcan, Iran	
Industrias Conductores Monterrey, Mexico	
Fadaltec, Colombia	
Iconel, Venezuela	
Nigerchin Electrical Development Co., Nigeria	
Termocanada Conductores Eletricos, Brazil	
Tolley Holdings, New Zealand	
Transwire Cable, South Africa	
Tyree Canada Wire, Australia	
Empresa Fluorspar, Mexico	fluorspar
Empresa Minera de el Setentrion, Nicaragua	gold
Fraser Paper, Madawaska, Maine, U.S.A.	paper
Kerr Addison Mines	
Mogul of Ireland, Republic of Ireland	zinc-lead
Noranda Aluminum, New Madrid, Mo., U.S.A.	aluminum reduction and wire and cable
Norandex, Cleveland, Ohio, U.S.A.	aluminum building products
Friguia, Republic of Guinea	alumina
Noranda Metal Industries	
French Tube Division, Newton Conn., U.S.A.	specialty tube
Placer Development	
Marcopper Mining, Philippines	copper
McDermitt Mine, Nevada, U.S.A.	mercury
Fox Manufacturing, Australia	industrial equipment and forest products
Northern Cattle, Australia	cattle
Tara Exploration and Development	
Tara Mines, Republic of Ireland	zinc-lead

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